

American

FORESTS

JANUARY 1955

**FIRE
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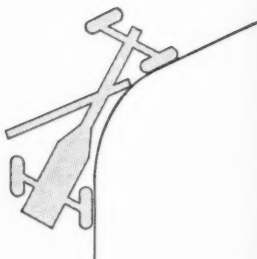
OPERATION FIRESTOP

By Alva Neuns—Pg. 8

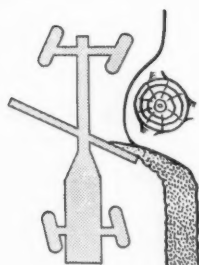
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Volume 61
No. 1
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American FORESTS

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THE AFA

The American Forestry Association, publishers of AMERICAN FORESTS, is a national organization—independent and non-political in character—for the advancement of intelligent management and use of forests and related resources of soil, water, wildlife and outdoor recreation. Its purpose is to create an enlightened public appreciation of these resources and their part in the social and economic life of the nation. Created in 1875, it is the oldest national forest conservation organization in America.

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San Francisco, 19

Letters to the Editor

Watch Those Rain Drops

EDITOR:

I see that my friend Weldon Heald has an article in the November issue of *American Forests*, entitled "Watch Those Rain Drops." He is certainly striking a much needed chord. A lot of our country is going to the dogs, or better speaking, to the oceans where the soil cannot do the present generation any good or into our reservoirs where it can only do us harm. To travel along the rim of the canyon at the head of Meade Lake and see the miles and miles of silt, topsoil from the watersheds, deposited there and to realize the devastation occurring in the Navajo, Hopi and other ranges up stream should make anyone cry out for reform. Mr. Heald may not have observed these areas in particular but he has seen this devastation in hundreds of other places.

With him I must question the wisdom of the Bureau of Reclamation and the Army Engineers for I cannot see that they are doing more than applying the "straight jacket," he mentions. The watersheds and the underground waters are the vitals and consideration of them is just too trivial for the big engineers.

I must, however, rise to the defense of some of the "screwballs" Heald mentions. His theme is "back to nature" and I am certain that many, not all, in the Forest Service and in the Soil Conservation Service are striving to bring about conditions comparable to those which existed in the time of the Indian, the buffalo, the elk, the deer and the antelope, before the get rich quick white man came onto the scene. Let us look into the past a bit. Was the top of the Chiricahuas clothed with brush so thick that it was almost impossible to crawl through it? Were the millions of acres north of Prescott and in the Apache country covered with a dense stand of juniper? Were the gentle slopes east of the Sacramentos in New Mexico invested with an abundance of piñons? Was the San Pedro Valley for 50 miles a jungle of mesquite? By no means. These areas were clothed with luxuriant grass. Of course the pines, junipers, piñons and mesquites were there but they were not hogging the entire landscape. Cattlemen and lumbermen are largely responsible for present conditions throughout the West but they can't be blamed too much, for "enterprise," "competition," "lax laws and no laws," and "politics" all contributed. The Forest Service, today, has no adequate range management policy and it never has had. The Forest Service and individual cattlemen are now undertaking to restore original conditions by grubbing out junipers but what good will it do if the grass isn't given a chance to take over? If the usual cattlemen sees a blade of grass he must move in a cow to consume it.

We should hail the use of fire to eliminate brush and promote the growth of grass providing we are going to protect the range afterward. Nature was using fire long before the white man came along. The Indian and lightning saw to that. And our forests were the most magnificent in the world. No one wants a holocaust but the best way to prevent it is controlled burning. Trees have their place, God bless them, and so does grass. Let's permit them to grow up together. Remember, grass is wonderfully equipped to prevent erosion and to carry water deep into the ground. If we wish to have springs, permanent streams, clear water in our reservoirs and

high water tables we must protect our watersheds. Trees and grass are the answer.

Leslie N. Gooding
Retired Botanist
U. S. Department of Agriculture
St. David, Arizona

Timber Tax Laws

EDITOR:

Now that I'm back in Orange county I've had a chance to mull over all the sights we saw on your Conservation Caravan and I am impressed by the fact that the tax laws in the Pacific Northwest seem to be more favorable to tree growers than here. To see the timber out there you would think they would never run out, but brother they can if they don't keep up the good work of growing timber. The leaders and lawmakers are helping in enacting liberal laws favorable to tree growing. For instance, a plantation of young trees has a very low tax rate value while the trees are growing and when they reach marketable age the rate of tax soars.

This to me makes common sense. The time has been in Orange county when timber could have been considered King, (as in the West) and still could be but for our wanton waste of timber and timberlands. There has been a great opportunity for our county commissioners and state representatives to have rendered a great service to our people by encouraging conservation of one of our greatest resources and I am afraid we have woefully failed in this matter. However, there is still a chance through the process of planting trees and conserving the young timber we do have left. This will take planning on the part of everyone including land owners as well as our county and state governing bodies. Are we equal to the task? I'll say we are. So let us get in there and get things done. We owe it to the future generations.

In the Northwest timber is very definitely King and under the system of harvesting and reseeded by natural and artificial means employed by industry, government and private landowners, timber is going to stay King and the many rivers and streams in that section are going to be free from lousied-up water and will be flowing with cool, clear water which is necessary to the well-being of any people.

Just the same, I saw some areas in the West where the timber would not surpass our own beautiful hemlocks and tulip poplars in the Joyce Kilmer Memorial Forest near Robbinsville, North Carolina. At Glacier National Park, the park naturalist told me there were redwoods in California that would cut 640,000 board feet to the tree. I asked two foresters in the group if they would confirm that statement and they said they would. I was still doubtful, however, and later on I remarked to Professor Emanuel Fritz, an authority on redwoods, that I was anticipating seeing a redwood that would cut 640,000 feet. He explained that this figure was incorrect and that the naturalist was figuring a tree 300 feet tall, 30 to 35 feet in diameter and not making allowances for the bark being two feet thick in some cases and for the saw traveling through the timber a number of times to saw the boards. However, he explained some would cut 350,000 board feet or better which was enough for me.

G. P. Sykes
Tree Farmer
Orange County, North Carolina

(Editor's Note—Commenting on Mr. Sykes' letter, Prof. Fritz reports, "Mr. Sykes remembers the figures very well, but I believe the species should be given. The tree reported to contain 640,000 board feet is a Sierra redwood (*Sequoia gigantea*), and is known as the General Sherman tree. In the 1920's a party of engineers measured this tree with a transit, at various points along its trunk and from these figures computed the total volume of wood and bark to be 50,000 cubic feet. Later, someone multiplied this by 12 to obtain the board feet. The board feet unit should never be used in that way. One must allow for sawdust, slabs and edgings, and of course, bark thickness should be deducted. When this is done the General Sherman could produce 350,000 board feet, provided it is sound and could be felled without breakage.")

Awards Program

EDITOR:

May I take this means of commending you on the very favorable publicity you have given to the recipients of the conservation awards in the October 1954 issue of *American Forests*. The cover page and the splendid story will certainly stress this important activity of The American Forestry Association.

M. D. Mobley
Executive Secretary
American Vocational Association,
Inc.

Feature Photo

EDITOR:

We were surprised and pleased to note that the "Feature Photo of the Month" in your October 1954 issue of *American Forests* pictured an odd-shaped tree growing in one of the areas administered by this office. We wish to call your attention, however, to an error in the caption, which named the place "Prince William State Park." The correct name for the area is Prince William Forest Park.

Harry T. Thompson
Acting Superintendent
National Park Service
United States
Department of the Interior

It Was a Honey, Anyway

EDITOR:

I note in your October, 1954 issue under the heading "What's News Across the Nation" I was given credit for being the winner of Mr. Pontzer's mystery plate contest at the recent AFA meeting in Portland.

So that my boyhood mentors in wood technology at the University of Washington (Doctors E. S. "Scotty" Harrar and F. F. Wangaard, now at Duke and Yale, respectively) won't think I was a better student than I was, let me assure you I won the contest on a fluke! I called the mystery plate honey locust when, as you report, it was *honey suckle*. So you see I won by default, not by superior knowledge of the woods.

At any rate, I was delighted to win the beautiful black cherry plate which Mr. Pontzer gave as the prize. It will adorn the Hagenstein household from now on.

W. D. Hagenstein
Managing Director
Industrial Forestry Association

Washington



Lookout

By ALBERT G. HALL

A NEW AND POTENTIALLY IMPORTANT GROUPING OF CONSERVATION INTERESTS was evident at the National Watershed Congress which convened in Washington, D. C. on December 6 and 7. Spearheaded by the National Association of Soil Conservation Districts, and jointly sponsored by a wide variety of organizations, the congress passed no resolutions and as a group, took no concerted action toward a legislative program. However, the group exhibited a unanimity of resolution that soil and water are basic to the continued existence of the economic and social life of the United States, and that acting individually, as well as collectively, the users and developers of watersheds, large and small, will see that the Congress of the United States, the state governments, and the local governments combine their efforts toward the protection and wise use of soil and water. While a large number of the familiar faces in the conservation movement were among the attendance, the major portion of the discussions, the interest and the zeal was displayed by managers, directors, and other representatives of small watershed associations—the persons who are doing a conservation job on the ground, in their own localities, both with and without governmental assistance.

THIS ESSENTIALLY GRASS-ROOTS GROUP OF CONSERVATIONISTS was assembled to discuss water and watershed problems generally, but the chief focal point was Public Law 566—the Small Watersheds Act, passed by the 83rd Congress. The new law, under which operations are just beginning (in fact, as of the time of the watershed congress, the Department of Agriculture had not yet completed its work on the policy statements and handbook for its field personnel) authorizes the Secretary of Agriculture to cooperate, both financially and technically, with states and local agencies in works of improvement for watershed protection and flood prevention. Limitations written into the law keep the activity confined to small watersheds or sub-watersheds of larger ones, and require that local agencies or individuals contribute substantially to the financing.

BY SECRETARIAL ORDER ISSUED IN NOVEMBER, the Soil Conservation Service bears the major portion of federal responsibility for planning and surveys under the new law. The U.S. Forest Service is responsible for surveys and investigations on all forest land involved in watershed planning. Under the reorganization of the Department of Agriculture that took place early in 1954, state soil conservation offices have replaced the former regional offices. And, it is loudly rumored that the Commission on Intergovernmental Relations may recommend the transfer of the state offices to state control—a gradual transition over a five-year period, after which the federal government's chief participation will be in technical guidance and grants-in-aid. Rumblings at the watershed congress indicated that this proposal will run into stiff opposition from the people on the watersheds. They understand and believe in Soil Conservation Service as now constituted; they appear to have doubts as to the ability of the states to carry on as effective a program as has been carried on by the federal government.

GREATER APPROPRIATIONS FOR THE SOIL CONSERVATION SERVICE and for the U.S. Forest Service were bespoken by the group, with the westerners particularly standing four-square behind the Bureau of Land Management, the Geological Survey, and to a degree the Bureau of Reclamation of the Department of the Interior. On

(Turn to next page)

the other hand, the Army Corps of Engineers appeared to be nobody's sweetheart among the small watershed interests. Secretary of Agriculture Benson in his talk to the group, however, was quite clear that developments under the small watershed legislation would be a supplement to, and not a replacement for, the major works of control established downstream by the Engineers.

THE NEED FOR COORDINATION AMONG THE DEPARTMENTS AND AGENCIES OF GOVERNMENT was stressed throughout the congress, and progress along that line was indicated by Secretary of the Interior McKay who spoke as department head and as chairman of the President's Cabinet Committee on Water Resources Policy. Coordination is being effected among the Departments of the Interior, Agriculture, Defense, and Health Education and Welfare, he said, but his committee will propose some new legislation to define more clearly the areas of authority and responsibility.

A NATIONAL WATERSHED POLICY is expected to be placed before the 84th Congress. Two bills were introduced in the closing days of the 83rd Congress "to establish national policy respecting the development and use of water resources." These were dropped into the Congressional hopper for information purposes and advance study only. It is anticipated that revisions of these bills will be worked out with the Administration before their introduction.

100 MILLION DOLLARS A YEAR AS A CONTINUING APPROPRIATION for federal participation in small watershed development was suggested by the watershed congress' Committee on Federal Appropriations. Reporting for the committee, Mrs. William K. Jackson, New Hampshire State Senator and a newly-elected member of the board of directors of The American Forestry Association, proposed 200 watershed "starts" each year at a total first-year cost of \$20,000,000. Pilot experience, she said, has shown that work can be completed on the average watershed in about five years. Thus, after a five-year period, a continuing appropriation of \$100,000,000 annually is considered necessary to maintain a stable staff of technicians and to provide the required services to meet the watershed problems. A report distributed at the congress by the National Association of Soil Conservation Districts showed 10,290 watersheds as needing treatment—involving areas of over 426 million acres. The report was gleaned from 1,548 out of a total of 2,597 soil conservation districts; the number of watersheds and the acreage involved is expected to be considerably increased when all reports are in. Total appropriations to the Department of Agriculture for watershed protection and flood prevention work in fiscal year 1954 were \$11.9 million; in fiscal year 1955, \$12.9 million, plus \$1.75 million for work specifically related to Public Law 566—far short of the target figure of the committee. Secretary Benson showed no inclination to request funds in the magnitude suggested by the committee. "State governments," he said, "have a key position in helping local organizations to plan and finance watershed works of improvement. The federal government will provide only such assistance as is needed and feasible to supplement the resources available from local watershed interests and in the state governments." In closing his remarks, he re-emphasized the place of the states: "The new watershed protection program clearly should not be looked upon as some miracle coming out of the federal treasury. If it is successful, it will be because local people, working through their local organizations with the help of their state governments, are determined to assume and maintain the principal initiative and bear a major share of the cost of the job, seeking from the federal government only that additional assistance which is beyond their technical and financial capabilities."

AN EXAMPLE OF HOW THE NEW WATERSHED ACT WILL WORK ON THE GROUND was given by Secretary of the Interior McKay. He drew attention to the Upper Hocking water project in Ohio as a relatively typical example of the projects that will be carried forward under the act. There, he said, "While technical assistance and contracting of flood prevention measures will be provided by the federal government, local people will contribute about half the total installation cost. Some participants in the congress expressed a desired policy of having the government help those who help themselves when priorities must be decided in any geographical region while others stood fast for a policy that would provide federal aid on the basis of need."

(Turn to page 58)

EDITORIAL

Birth of a Movement

One forester who attended the first National Watershed Congress last month in Washington (See page 14) said he found it rather "bewildering." Which may be another way of saying he didn't think it very professional. True, the affair had its hectic moments. Deliberations on watershed problems were frequently punctuated by enthusiastic attacks on the Army Engineers. The Committee on Federal Aid to Agriculture came in for a pasting too. This is the group headed by Mr. Ed Condon that has recommended that the chief burden of carrying on soil conservation work be shifted to the states on a grant-in-aid basis. Even in discussing remedial measures for sick watersheds there were times when delegates seemed to lose sight of the fact that no one group or agency can do the whole job—that the effort must be coordinated with the forester, the soil expert and the engineer all working together in harmony to achieve a management pattern beneficial to all.

Just the same, this conference wasn't merely shrill. It also packed a wallop. To find a parallel perhaps it is necessary to go back to the first recorded meetings of The American Forestry Association of 50 or more years ago. Those meetings weren't very professional either. Actually, there was only a handful of professional foresters in the country in those days, all of them indoctrinated with European methods that weren't always applicable here. But what those people lacked in "professionalism" they made up for in zeal. They had an idea and they believed in it. What they started and what has been accomplished since is a matter of record.

Is history about to repeat itself? There is now considerable evidence that it may. Like those early pioneers in the forestry movement, the people who attended the water congress are fired up and "rarin'" for action. Do they have the leaders so necessary for the success of a new movement—men like Pinchot or Fernow? Not as yet, although the gathering was liberally sprinkled with a number of sound aggressive men with plenty of experience in the water field. From these ranks may come the leader an increasingly water-conscious public is looking for.

The young watershed movement did not spring up over night, of course. It has been building up for a long time as "success stories" gained circulation from such isolated islands of watershed activity as the Muskingum and Brandywine valleys. Even more important in helping to bring the fledgling movement to full flower—the one step that made a Watershed Congress possible—was enactment by the 83rd Congress of the Watershed Protection and Flood Prevention Act that gives water equal federal recognition with soil. By this one legislative stroke, the Congress

recognized watershed development as a national problem.

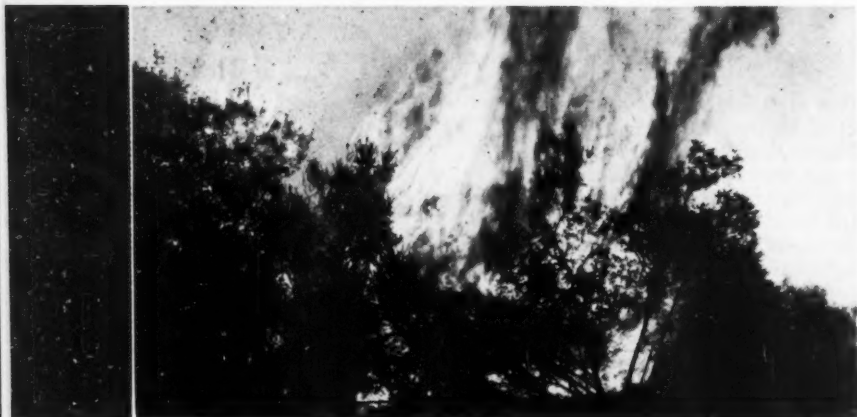
While it has given the go ahead signal on watershed management programs, the Congress, at the same time, has served notice that the various localities and states are going to have to do their share. This program, Secretary of Agriculture Benson told the Watershed Congress, should not be regarded as some new miracle coming out of the federal treasury. The age of miracles in this respect is now over, the Secretary said. The federal government plans to help on a partnership basis but the localities and states aided are going to have to shoulder their share of the cost. The amended Water Facilities Act for making long term direct or insured loans in all states for soil and watershed conservation practices will help, the Secretary said. So will the revision in the 1954 internal revenue laws that enables farmers and ranchers to treat expenditures for a number of soil and water conservation measures as current expenses that may be deducted from farm income for tax purposes.

Are the states accepting this challenge as laid down by the 83rd Congress? There are strong indications that they are. As of November 1, governors of 37 states had provided administrative machinery for carrying on the states' responsibility in reviewing and approving applications for federal watershed assistance on Mr. Benson's terms. Active interest is also reported by commercial banks in the amended Water Facilities Act. Also a healthy "we'll show them" attitude is developing in the states, some of it directed at the administration itself, that must be most gratifying to Mr. Benson and those of similar philosophy who have been needling the states to overcome more of their problems with a minimum of support from the federal till.

One can't help but like the complexion of this young watershed movement and the way it is developing. Forestry, particularly young foresters, would be wise to tie in with it. By virtue of their training and discipline, foresters will have much to offer as this program gains momentum. The watershed is the perfect geographic entity for handling all of our renewable natural resources on a package basis. People living together on a watershed—including those in both urban and rural areas—are linked together by an unbreakable chain of cause and effect in resources management. Only by working together can they solve all of the problems that plague more than 1,000 sick watersheds in America today. As people learn these things, these problems will be solved. And in their solution good forest management is certain to rise to new heights of accomplishment.

Some of the answers to the problem of fire prevention and control are being provided by a one-year operational study conducted in California on fire buildup and behavior

**FIRE
STOP**

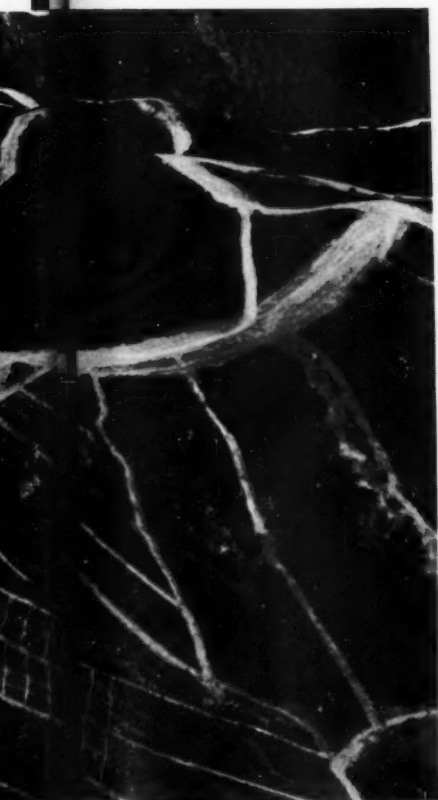


OPERATION FIRESTOP



By ALVA NEUNS

Test area from the air shows plots, firebreaks, roads and trails all built for drive to control fire



ON a hot, dry September day in 1954 a huge column of smoke rose high into the air dwarfing the 4500-foot Camp Pendleton mountains northeast of San Diego, California. As it hit the upper air it billowed and "mush-roomed" into the bomb-cloud shape so currently familiar to millions of American citizens. At its base 200-foot flames rolled and twisted through the smoke and with a crackling, muffled roar the fire picked up speed, releasing heat energy comparable also to bomb heat—to the satisfaction of the 40 men observing at a safe distance or crouching behind corrugated aluminum shields, watching a battery of recorders wired to instruments in the heart of the fire and near the fire's edge.

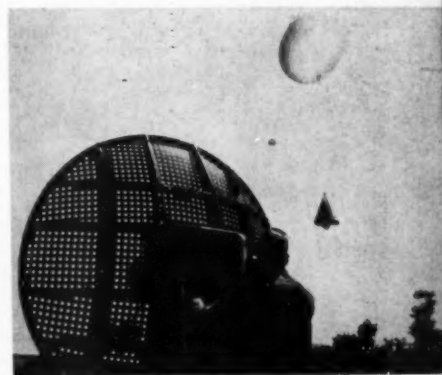
For this, in spite of its size, was a captive fire—a fire created and carefully measured and controlled by research engineers as part of Operation FIRESTOP, described by its sponsors, the California fire services and federal and state civil defense groups, as "a one-year operational study designed to explore certain aspects of mass-fire build-up and behavior and to provide the fire services with some new aids to mass-fire prevention and control."

A large order for one year—and one that the leaders of the contributing organizations knew could not be filled by other than a long-term, nationally organized fire research program similar to those recently begun in both Great Britain and Canada. But they knew too that the time was now—that fire of conflagration proportions in either urban or wildland areas cannot be controlled by existing fire control methods—that no intensive operational study of mass-fire control methods had ever been made and that new ideas were at hand waiting for testing such as new chemical fire retardants, new uses for aircraft, new ways to apply water and alter fuel, new ground attacks for greater speed—and the ever present need for more detailed knowledge of the basic scientific principles governing the behavior of fires large and small.

And so the California Division of Forestry, the U. S. Forest Service, the Los Angeles County Fire Department, the Los Angeles City Fire Department and federal and California civil defense agencies pooled their facilities, experience, manpower and responsibility and on January 3, 1954, FIRESTOP was



A 'copter takes off with 100 gallons of water in canvas tank for use on spot fire



Air Force weather service helped project by providing air, humidity measurements

born. A pioneer example of AFA's Program for American Forestry—"We recommend . . . coordinated effort by all agencies to expand and intensify fire control programs . . ."

Soon the Pacific Intermountain Association of Fire Chiefs indicated its interest and provided support. The Federal Civil Defense Administration recognized the value of and the need for solutions to the critical fire problems now shared by all fire agencies. The U. S. Department of Defense provided assistance through the Air Fleet Marine Force Pacific, the Sixth Army Headquarters, Eleventh Naval District; a mobile Air Weather unit was assigned to the project by the Air Force through its Air Weather Service, and cooperation with the Marine Corps at Camp Pendleton, San Diego County provided the location necessary to conduct field tests on a scale relative to large fires—a 25-mile-long, steep mountainous area on the Base itself covered with heavy dense brush as well as grass and lighter fuels.

Research knowledge, equipment and experienced technical assistance

were contributed by the California Forest and Range Experiment Station, a research branch of the U. S. Forest Service; the University of California School of Forestry, the University of California at Los Angeles Engineering Research Institute, U. S. Forest Service Equipment Development Center, and the U. S. Weather Bureau.

As FIRESTOP and its significance became known to them, many chemical, aircraft and oil industries generously offered and supplied men and materials. Service companies such as Pacific Telephone and Telegraph also participated.

Although FIRESTOP grew with phenomenal speed once it was in-

problem without waiting for time-consuming fund raising and staffing. But it also put FIRESTOP on a definite short-term basis. Obviously expedient, it was aimed intentionally at making an aggressive start with the hope of pointing the way to future, more permanent mass-fire research programs.

Action was accelerated too by the disastrous and costly large fires in the Southern California watersheds during Christmas week of 1953. These fires threatened the economy as well as the lives and property in the densely populated area of Los Angeles. They demonstrated again that no existing control methods can stop a big free-burning fire once

Forester at Riverside, California and Region 8 Fire Coordinator for Civil Defense this was an all-too-familiar fact. His 30 years of experience as fire boss on fires like these had shown him that heroism, courage and hard work are not enough. Neither are mobilized manpower or machine strength. Mankind had to know more than he now knew if he was ever to conquer such an enemy. And that knowledge had to come from the same world of science and multi-million dollar research that had led to the terrifying fire-producing weapons of modern warfare. He visualized the vast wildlands of the United States not only as sources of

Battery of recorders wired to instruments in the heart of a controlled fire



Pulling accordion-laid cotton jacket hose from firetanker with helicopter



augured, it is important to remember that all men from all organizations and industries involved in planning and executing the operation gave of their time and skills in addition to their regular jobs. During the 90-day field testing at Camp Pendleton, beginning July 1 and ending October 1, they traveled back and forth from points throughout the state, varying their participation from several weeks at a time to a few days depending on the FIRESTOP work schedule. The work force also came for short tours of duty, principally from the California Division of Forestry and the U. S. Forest Service.

This was a way an immediate attack could be made on a critical

it begins to run. In this area, responsibility for the suppression of explosive, fast moving fires is shared by wildland and urban fire services alike. By preplanning and prior agreement all agencies—local, state and federal—work together to provide fast initial attack backed by immediate reinforcements to fires burning in steep inaccessible areas. But in spite of the strongest striking force they can dispatch, every year the long rainless summers, dry vegetative fuel and hot high-velocity winds from the nearby desert combine over the steep topography to produce spectacular rates of fire spread—literally defying mankind to stop them.

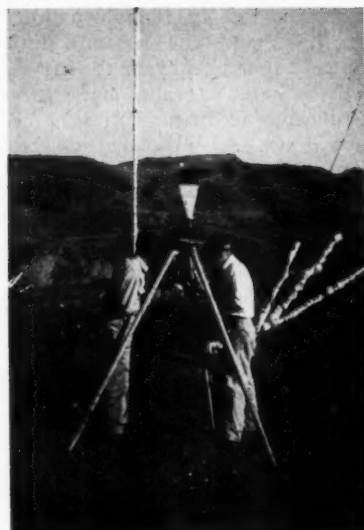
To James K. Mace, Deputy State

timber, grass and water more valuable now than ever before in history, but as an enormous blanket of wildland fuel spreading over valleys, low hills, steep mountains and down into winding canyons—all vulnerable to saturation fire bombings in time of war as well as present human carelessness and lightning. And he could see that the cities located adjacent to these wildlands and dependent on them were no longer isolated units from a fire standpoint but continuous fuel also in the event of enemy produced mass-fire.

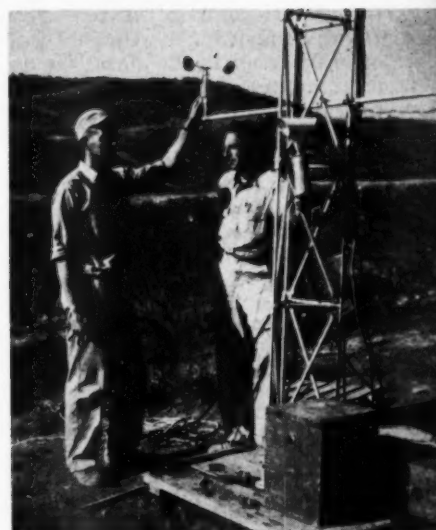
Simultaneous ignition over a wide area can produce fire-storms—blazing tornadoes 1000 feet across capable with their explosive strength of ripping whole trees out by the



Direction of canyon winds was charted at FIRESTOP by dropping smoke bombs



UCLA engineers set up a radiometer to measure the radiated heat intensity



Two technicians at project check wind instruments before relaying information

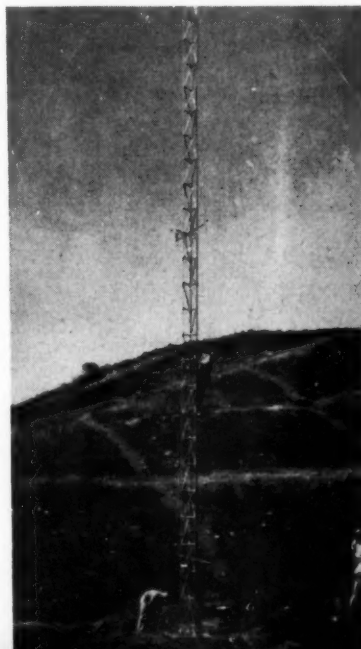
roots as happened on the De Luz in 1949—a wildland fire. Or destroying whole cities as was the case in Hamburg, Germany during the last war. Both, once they began to roll, were Gargantuan unconfined fires burning in free space and with free choice of all the contributing fire-feeding factors of the upper atmosphere and 100 square miles of fuel-covered rough topography. If they were to be stopped or held to an acceptable minimum at all it would entail scientific knowledge of the behavior of fire in quantity — a bringing together of the sciences of meteorology, physics, chemistry, engineering — task-force teams of foresters, botanists and plant physiologists—of military strategists and aeronautical experts. New ways to prevent small fires from becoming big ones had to be found, too.

Mace began a campaign. He soon had the support and interest of the urban fire chiefs in his area—and in 1952 he put the problem before University of California's Dr. Keith Arnold, fire research specialist and professor of fire protection in the School of Forestry. Arnold is well acquainted with the need for more knowledge in the field of fire behavior. "Fighting forest fire takes more than brute strength and numbers of men," he tells his students. "It means careful consideration of every available source of information concerning each of the basic factors of fire behavior and the practical application of the scientific facts and principles that actually determine the rate at which a fire

will spread in order to predict how a given fire will behave—where it will go—how fast."

The University and the California Forest and Range Experiment Station, had long ago drawn up an agreement that allowed them to work in close cooperation—to make a combined attack on a billion-dollar-a-year United States problem, forest fire. Charles Buck, chief of the fire research division in Berkeley, had spent 19 years in the study of weather, fuel and topography and their influence on fire behavior. He and the handful of other forest fire research scientists scattered throughout the country—14 in all

Here burned over small chemical retardant test plots can be seen in background



—have been fighting a losing battle. "There is less forest fire behavior research being done now than there was 20 years ago," he says, "in spite of the fact that due to increased use of forest land, fire losses in the United States have more than doubled."

Some of the results of past work are now serving fire protection agencies well in the form of general fuel classifications, fire danger indexes, rate-of-spread tables and methods for measuring fire weather. Some essential information on topographic influences is being used in a practical way by planners for fire protection and fire control—but much data remains to be analysed—many technical reports await adequate financing and staffing before they can be translated into action and usable information for fire training, prevention and control. This past research did provide, however, valuable detail and background for the kinds of things needing investigation which related to large fire behavior and conflagration potential under both peace and wartime conditions.

These requirements for research and fire defense were recognized by the Pacific Intermountain Association of Fire Chiefs at their meeting in Las Vegas, Nevada on September 17, 1952. The PIA of FC drew up a resolution aimed at recommending the establishment of a United States Fire Research Laboratory, for presentation to the directors of the International Fire Chiefs' Association. It pointed out the gravity of

the present contrast between scientifically created fire weapons for offensive war and the means for defense against them. It emphasized that under these circumstances all fire services, agencies and associations whether administrative, military or research now shared responsibility and should be able to unite on a national basis for attack on the problem—a procedure not possible

under the lack of a single national fire head and the separate unit-control system prevalent in the United States. It also made three significant recommendations: "1) Immediate and extensive Government cooperation in a correlated plan of fire control operations between civilian and military authority, and 2) Establishment of a research project available to and through the fire services, to study fire behavior, its control, and the possible use and development of new methods, facilities and materials, in combating major fire conditions, and 3) Diversion of some of the Government efforts and operations now devoted to such military offensive work . . ." At the request of the PIA of FC, Mace, Arnold and Buck then pooled their experience and knowledge. They drafted a long-term plan for a National Fire Defense Program under Wartime Conditions. It was accepted by the International Association of Fire Chiefs in Washington, D. C.

But in the winter of 1953 the problem was still to be solved. Since action on a national scale is often slow in developing, the fire services in California decided not to wait. Operation FIRESTOP was launched as a test program.

January 1954, saw the drafting of an organization plan. The FIRESTOP executive committee consisting of one representative from each of the participating agencies, named Dr. Keith Arnold as manager and L. R. Chatten, assistant fire control officer for the California Division of Forestry, Sacramento, California, as assistant manager. Charles Buck was assigned as technical director and early in February Progress Report No. 1, "Organization Plan and Work Schedule" was published and distributed.

In March, laboratory tests were made on a variety of chemicals offered by their manufacturers as fire retardants. Some were eliminated there—others showed promise and

were set aside for field testing. A small wind tunnel was built and recording anemometers were calibrated for installation as part of the FIRESTOP wind survey to be conducted in cooperation with the U. S. Weather Bureau. An advisory committee was formed of interested members of organizations and agencies. New ideas were solicited and continued to come in for trial in the field.

In April, the Federal Civil Defense Administration and the U. S. Forest Service completed a cooperative agreement and \$50,000 was allocated for help in much needed financing.

By this time aerial photography was completed of the test site on Camp Pendleton. The 25-mile FIRESTOP area was mapped and laid out in test plots designed to cover a variety of fuel and topographic conditions and by the end of May bulldozers and hand crews contributed by Los Angeles County Fire Department, the California Division of Forestry and the U. S. Forest Service began cutting the 20 miles of 12 to 150 feet wide firebreaks needed for safety in test burning. They eventually also built 10 miles of roads and jeep trails and leveled off three heliports in the steep mountainous country. In the fire laboratory chemical retardant tests were completed.

The Pacific Coast Intermountain Association of Fire Chiefs added a member to the FIRESTOP executive committee as did the office of the California state fire marshal. Lists of needed equipment and materials continued to grow and were supplied and shipped to Camp Pendleton by contributing agencies where warehouse, laboratory and office space had been provided by the Marine Corps. Technical personnel arrived during June to supervise the installation of 22 weather stations, 14 continuous recorders and 18 wind towers 30 to 50 feet high on ridge tops and canyon floors within the boundaries of the sprawling test terrain.

On July 1, FIRESTOP went into full scale operation. From then until the end of the field season on October 1, 40 to 45 men per day worked a daily average of 400 hours. Mileage on 31 vehicles owned by the University of California, the State Division of Forestry and the U. S. Forest Service including sedans, fire-tankers, trucks, jeeps, bulldozers and

(Turn to page 54)

AMERICAN FORESTS

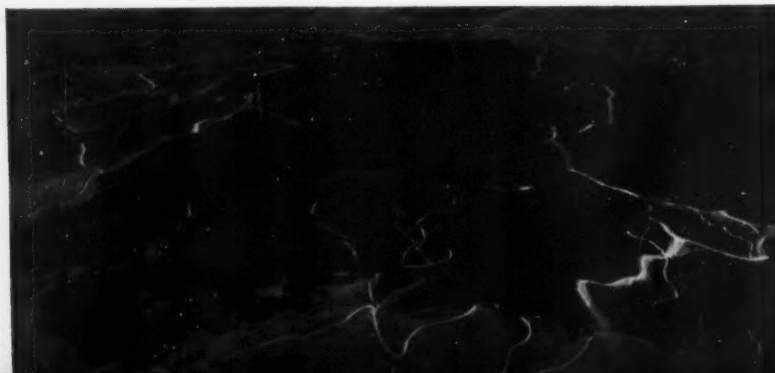


Equipment and materials arrive at Camp Pendleton, headquarters of the project



Finding the moisture content of fuels was part of fuel classification study

More of the extensive network of roads, plots and firebreaks



With 1954 now history, Boy Scouts and their leaders look back with pride on a year devoted to doing a collective . . .



GOOD TURN FOR CONSERVATION



Ted Pettit, Scout conservation director



IF the current crop of Boy Scouts and Explorers has anything to say about it, there'll be some pretty good hunting and fishing in this country for a long time to come, Ted Pettit, Scout conservation director, told *AMERICAN FORESTS* last month in reviewing the accomplishments of the "National Conservation Good Turn" program launched last year to "arouse public recognition of the need for adequate protection and wise management of our soil, water, minerals, forest, grassland and wildlife resources."

Started as the result of a request by President Eisenhower, this program is spearheaded by 900,000 volunteer leaders across the country—men and women who give freely of their time and energies to conduct a constructive program for boys. This is as true on a national level as in the local community, where the program really reaches the boy. This is evidenced by the group of high-powered conservationists and conservation-minded business executives who make up the National Scout Conservation Committee.

The core of this committee is a representation of the Scout's own executive board that includes Wheeler McMillen, of the *Farm Journal*; Norton Clapp, Boise-Payette Lumber Company; and Committee Chairman Ross L. Lefler, of the United States Steel Corporation. Other able leaders who serve as supporting members are Dr. Ira N. Gabrielson, Wildlife Management Institute; R. W. Eschmeyer, Sport Fishing Institute; E. Laurence Paler, National Wildlife

(Turn to page 42)



**Inspired by Public Law 566,
a grass roots watershed
movement last month put
in its first appearance in
Washington at the National
Watershed Congress**

By JAMES B. CRAIG

AN increasingly-militant grass roots watershed movement last month brought new names and new faces to Washington as 300 delegates from 39 states, many of them from Soil Conservation Districts in Midwestern agricultural areas, congregated for the first National Watershed Congress in history. Inspired by the Watershed Protection and Flood Prevention Act (Public Law 566) of the 83rd Congress, the two-day conclave generated a lot of enthusiasm for the watershed as the near-perfect geographic unit for managing water and related resources as a package proposition. Administration support in helping to activate the new program was pledged by three Cabinet Secretaries — Agriculture, Interior and Defense — although Agriculture Secretary Benson warned that the program should not be regarded as "some new miracle coming out of the federal treasury." In brief, the

localities and states will have to carry their share of the financial load, the Secretary said.

Public Law 566 makes a new federal-state watershed approach to the water problem possible. The law gives water management problems equal federal status with soil control and improvement measures. It provides the means whereby the federal government, working through the Secretary of Agriculture, may cooperate with the states, their political subdivisions, or other local organizations in planning and carrying out works of improvement for flood prevention and the agricultural phases of conservation, development, utilization and disposal of water. Works of improvement for which assistance can be provided under the act include structural and land treatment measures for 1) flood prevention measures that produce significant and measurable reduction in flood and sediment damage and for

The Water Wagon is

**C. Petrus Peterson, of
Lincoln, Nebraska, saw
Soil Conservation Dis-
tricts, rather than "re-
forestation," solving
the watershed problem**



2) agricultural water management, including irrigation, drainage, agricultural water supply and water conservation for agricultural use. As initiated by the local areas and approved by the Secretary, these plans will operate on a partnership basis with the localities concerned paying their share of the costs.

In the main, delegates to the Congress indicated that 566 is a good law and should be given an appropriate testing period before any drastic changes are proposed. One exception was noted. As now set up, water cannot be impounded under the act for any purpose other than flood prevention. As interpreted by the delegates, this means that a city in dire need of water may not use this program to build municipal reservoirs. Unless amended, they believe that this restriction may cripple the law and discourage public interest in it. Equally adverse would be the effect this particular section

would have in the case of farmers prohibited from using the program as a source of water for irrigation and groups interested in storing water for recreational purposes, it was pointed out. Delegates also scored what they fear may be a tendency to base this program on cost-benefit ratios rather than on actual need.

One goal of the Watershed Congress as reported by Mrs. Katharine Jackson, of New Hampshire, in the report of the federal appropriations committee, is 1000 flourishing watershed programs in the nation started up at the rate of 200 a year for the next five years. The law authored by Senator Aiken and Representative Hope (566) was used as a springboard by this committee for a much broader concept—one that would call for an annual continuing appropriation of 100 million dollars at the end of the five-year period. This report was roundly applauded by the delegates.

In addition to reports by 10 key committees that provided the working base for the conference, delegates also came prepared to air some pet peeves of their own and they aired them. More brickbats were probably thrown at the U.S. Corps of Engineers at this meeting than any similar two-day session on record. Others had a bone to pick with such groups as the task force committee of the Commission on Intergovernmental Relations which has reportedly recommended that the chief burden of carrying on soil conservation work be shifted to the states on a grant-in-aid basis.

E. H. Taylor, editor of *Country Gentleman*, declared: "There are three indispensable federal agencies

Thanks to Public Law 566 states are now looking to their water problems reported Francis C. Lindsay, of Loomis, Calif.

is Beginning to Roll



Mr. Peterson's statement, left, was challenged by Bryce C. Browning who sees forestry playing a big part in program



— the Soil Conservation Service, which must retain its full federal status intact and be gradually supplemented in its technical personnel; the Forest Service, and the Division of Water Resources of the Geological Survey, both of which will require increased technical personnel if they are to perform the services that will be necessary under a watershed program.

"We must be vigilant also to protect these agencies against disabling attacks—and I mean plainly and specifically the recommendation by the task force of the Commission on Intergovernmental Relations, which would further break up the Soil Conservation Service and disperse its technical personnel among the states. If that goes through, then we have wasted our time here," Mr. Taylor said.

Mr. Taylor's statement touched off a barrage of "amen's" from the delegates followed by a parade of speakers to the several microphones to endorse his statement. One California delegate asked permission to add the Bureau of Land Management to Mr. Taylor's list of indispensable federal agencies. When Gordon Zimmerman, representing the National Grange, said that the full weight of his organization would be back of the SCS should any such proposal be given serious consideration there were calls from the audience of "Where is the Farm Bureau?" Chester Wilson, Conservation Commissioner of Minnesota, told the audience any "disintegration of the SCS would be a national calamity and that any move to change its national status should be spiked."

Water experts hailed the Congress as a constructive step in the right direction. Said Fairfield Osborn, president of the Conservation Foundation, "Who would have dreamed 10 years ago of such a thing as a Watershed Congress?" At the same time, water technicians pointed to Congress' shortcomings that they hope will be corrected before another Watershed Congress, already being planned for next year, rolls around.

"This was a national congress in the sense that many geographical regions were represented," commented H. G. Wilm, formerly of the Forest Service and presently with the College of Forestry, State University of New York, "but it was not entirely national in its scope and viewpoint. Keenly interested and full of enthusiasm, the delegates showed that they are grasping the watershed con-



Audubon Society's John Baker (right) and Dr. Ira Gabrielson discussed how to promote public understanding on watersheds

cept. But there is more to it than soil conservation. None of us know so much about watershed development that we can afford to neglect the thinking of such experts as the Army Engineers on big downstream developments, on the one hand, or fail to bring in the viewpoint of professional foresters and land managers concerned with upstream management on the other. All of these groups have constructive contributions to make as the water wagon in the nation begins to roll." (Mr. Wilm's analysis of the Congress will appear in the February issue of AMERICAN FORESTS.)

The Congress was only minutes

old when C. Petrus Peterson, of Lincoln, Nebraska, announced that Soil Conservation Districts were going to be the big guns in the incipient watershed movement, "rather than reforestation." This was promptly challenged by Bryce C. Browning, of Ohio's successful Muskingum Watershed Conservancy District, who declared that the question of forestry "is very important" and that you "have to approach these things on the basis of the problems as they exist." (Flood control and forestry have gone hand in hand in the solving of the Muskingum Valley's flood problems.) E. H. Taylor also commented that he "couldn't accept Mr.

More county compact laws everywhere were urged by Otto Liebers, (right) of Lincoln, Nebraska's Salt-Wahoo Watershed Association



Peterson's statement." Christopher Granger, former assistant chief of the Forest Service, declared that the "great bulk of water comes from forested mountain areas that do not fall in the jurisdiction of Soil Conservation Districts." This statement received a second from J. W. Penfold, of the Izaak Walton League, of Denver, Colorado. A Georgia delegate said that over 60 percent of the land in his region was in forests and that any approach to the watershed problem must consider reforestation a very important factor.

Misconceptions on just how upstream and downstream flood control measures can function satisfactorily and on a mutually profitable basis appeared to be one obstacle in coordination of planning and application of watershed-management and flood prevention measures in upstream areas with the construction of downstream flood control projects. A case in point was a statement by Richard W. Smith, chairman of the committee on Federal, State and Local Cost-Sharing in Watershed Development and Protection to the effect that "headwater dams will have little or no effect on reducing the periodic 'catastrophe' flood downstream and may even add to them." This statement was vigorously challenged by some delegates.

Stepping into the breach, Mr. Wilm underwrote the validity of the statement by explaining that "water precipitation, to begin with, is something that no man can predict year after year in any given area. Let's assume that a headwater area experiences an unusually severe flash flood. Headwater dams retard and delay the onrush of this water downstream and transform it into a long, horizontal blow rather than a swift vertical smash. But although it is briefly retarded, this long, horizontal unit of water does continue downstream. True, its peak has been knocked off but it's still a tremendous volume of water and it is now spread out over a much longer time period. By the time it reaches downstream areas the rainstorm from the headwaters area has reached the downstream area, too. The storm and the flood hit the area together. What the committee means in its report—and they are absolutely right—is that the flood and the storm arriving together may cause more destruction than the peak flood would have had it smashed through before the storm arrived."

Carrying clarification to an even more elementary level, Ollie Fink, of Friends of the Land and another

Outline of Arkansas Plan on Watershed Management

HOW the several states can place themselves in sound legislative positions to take full advantage of anticipated advances in watershed management was a subject of keen interest at the first National Watershed Congress. How Arkansas proposes to do this was outlined by Clayton M. Hoff, executive vice president of the Brandywine Valley Association in Delaware and Pennsylvania who presented a memorandum on the subject by Joe C. Barrett, president of the National Conference of Commissioners on Uniform State Laws.

Roughly, the 48 states are divided into two groups, Mr. Barrett said. One follows the basic concept that applies the appropriation doctrine to water of streams and natural bodies; the other the riparian doctrine. The appropriation doctrine applies in 11 of the arid and semi-arid western states. The riparian doctrine prevails in the other 37 including the state of Arkansas.

In states following the riparian doctrine where the owners have held the riparian owner's right is a vested one, "it is difficult to see how the right can be taken away except by condemnation by the state and compensation to the vested owner," Mr. Barrett said. Arkansas is primarily an agricultural state. The use of water, however, for industrial, municipal, recreational and agricultural purposes has increased rapidly. There has been a drought cycle in Arkansas for three consecutive years and the problem has now become acute. The state's answer to these problems will be a water rights bill to be presented to the state legislature. The group of representative citizens who have been studying the problem for three years believes it will accomplish the following results:

- 1) Declare the public policy to be that title and right to control surface waters in streams and lakes in excess of the domestic needs of riparian owners, is in the state;
- 2) Create a water commission to whom users of water would make application for a water right, and would authorize the commission to apportion the available supply among the applicants with priorities based upon the date of the application, but saving first priority for those making a beneficial use of such water at the time of the passage of the act;
- 3) Exempts domestic use of water and recognizes that a riparian owner may make reasonable use of the available supply for domestic purposes;
- 4) The bill will be flexible enough to permit its administration in the public interest, so that the water commission can determine upon the record whether preference in a given watershed should be given to recreation and conservation of wildlife, municipal, industrial, agricultural, or other beneficial purposes;
- 5) Would provide for adequate notice and hearing to insure that all persons affected may be heard in connection with any application for a water right. Once a right is finally conferred, that right will have incidents of ownership similar to those prevailing in the western states following the appropriation doctrine;
- 6) The bill provides for adequate judicial review of administrative decisions;
- 7) Since the supply of ground water is not yet an acute problem in Arkansas, and because there is now great divergence of opinion relating to ground waters, the present bill will not in any way relate to ground waters. Ultimately, however, legislation relating to ground water will have to be developed in the drafting group's opinion.

pioneer in the Muskingum program, explained that there are four types of flood control. These are local measures such as revetments; dams that operate as faucets through which water moves (Miami program) but which retard rather than check the movement of water; storage dams as built by the Army Engineers in the Muskingum Valley which actually hold and control water; and finally operations on the land itself—reforestation, terracing and contouring—measures that cause insoak.

"Always remember," added Mr. Fink, "that the flood begins at the top of the hill."

The need for coordination, especially at the local level, was stressed at this point by a Pennsylvania delegate who said that he had personally been pleased the previous day to hear that the Administration is actually formulating a broad water policy for the nation. (The delegate referred to an address made the previous evening by Interior Secretary Douglas McKay.) Francis C. Lindsay, of Loomis, California, an official of the National Association of Soil Conservation Districts, was another delegate who saw hopeful signs on the water horizon.

"Thanks to Public Law 566 (The Watershed Protection and Flood Prevention Act) many states, for the first time, are examining the water

problem in their jurisdictions and this is helping to get the show on the road. Previously, water has been everybody's business and nobody's business. Today, they are beginning to get down to it."

To which Mr. Wilm added the recommendation that any state water coordination program, to be effective, should be headed up by a department of natural resources with broad interests and that the state forester, in every instance, should work on an equal basis with the state engineer. Under 566, a technical forester should be available at every stage of any state development program, he added. Enactment of county compact laws everywhere was another first step recommended by Otto Liebers, of the Salt-Wahoo Watershed Association, of Lincoln, Nebraska.

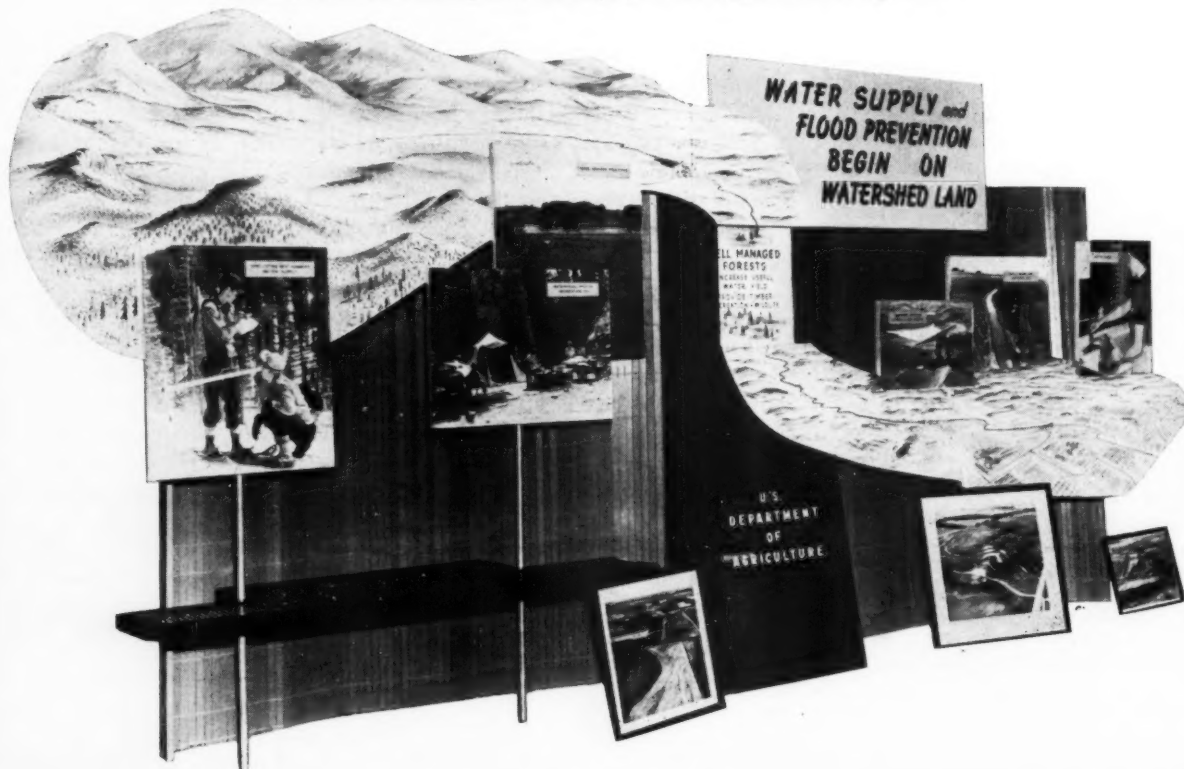
One unfortunate feature of the Congress was that the Department of Agriculture was not prepared to provide full instructions on just how 566 is to be implemented. Certain ramifications as they apply to cooperative efforts by the Forest Service and the Soil Conservation Service were still being worked out last month. With the Administration well represented at the Congress by the Secretaries of Agriculture, Interior and Defense—along with most of their key men—it also seemed apparent that the Administration was

interested in the views of the delegates on the implementation of the law and also in the preparation of a national water policy by the President's Cabinet Committee.

While the Congress was primarily a fact finding agency that passed no resolutions, certain recommendations were made by ten fact-finding committees whose combined views contained the hard core of thought that was developed at the sessions. Committee No. 1 on "Elements of a Sound National Land and Water Policy" (E. H. Taylor, chairman) declared that the "permanent welfare of the nation requires a basic, long range policy for the conservation, development and sustained use of our land, water and related natural resources"—one that recognizes "that these resources are interdependent and bound together in the system of nature and that programs for their conservation, development and constructive use should deal with them in their proper combination and not separately." In carrying out this program, the Committee found this would "involve federal, state and local cooperation and coordination of effort, with an equitable sharing of costs and the maximum practicable local initiative and responsibility."

Pointing to the fact that the "United States is physically a nation

Importance of sound management of forests in mountain regions was stressed as vital in watershed management in display of the Department of Agriculture



of watersheds," the committee said that here was the ideal medium whereby constructive resources programs can be carried out. To forward such a policy, it urged that: 1) Increased federal, state and private research to determine what physical measures are most effectual in watershed development; 2) Action by the states, not now so equipped, to set up competent state and local agencies to assure full cooperation and coordination at state and local levels; 3) Adequate legislation by the states, in advance of increasing demands on the water supply, to determine the respective rights of water users and settle "whose water is it?". (See box on Arkansas Plan, page 17.)

In reviewing existing and needed federal legislation, Clair J. Guess, of South Carolina's State Soil Conservation Committee, reported that "at long last a small watershed act has been put on our federal statutes . . . and one (Public Law 566) that has much to commend it. The committee's only quarrel with the law is with the language in Section 4 "providing that no factor other than flood prevention, in an impounding structure, shall be considered in determining whether federal assistance can be granted."

Mr. Guess said that "the strength or weakness of many other phases of the act may not be accurately evaluated at this time, for the reason that the act has not been in effect long enough to be thoroughly tested. We would, therefore, limit our comment to the following:

1) The bulk of the act should be put through a reasonable but limited testing time to give the administrators an opportunity to show what benefits can accrue from the law in the present form; except that:

2) The limiting and restricting language of Section Four should be revised and improved at the earliest opportunity in order to permit greater and more varied benefits to be accorded the people of America through this new small watershed program.

3) Provided further, that the enlargement and broadening of the benefits for impounding structures, shall entail full and equitable participation in the costs thereof by the residents of the area who are to be benefited by the construction.

A close review of the nation-wide emphasis of "flood control" as it relates to damage done by excessive rainfall followed in a very short time by droughts was also recommended



Congress Chairman Waters Davis, of Texas (right), said there is no one solution in solving nation's watershed problems



A long range policy for conservation was urged by E. H. Taylor, of Country Gentleman as Watershed Congress opened in Washington

by the committee. Emphasis, Mr. Guess observed, should be placed on the importance of "balancing supplies of water with our needs for water at a given time and place."

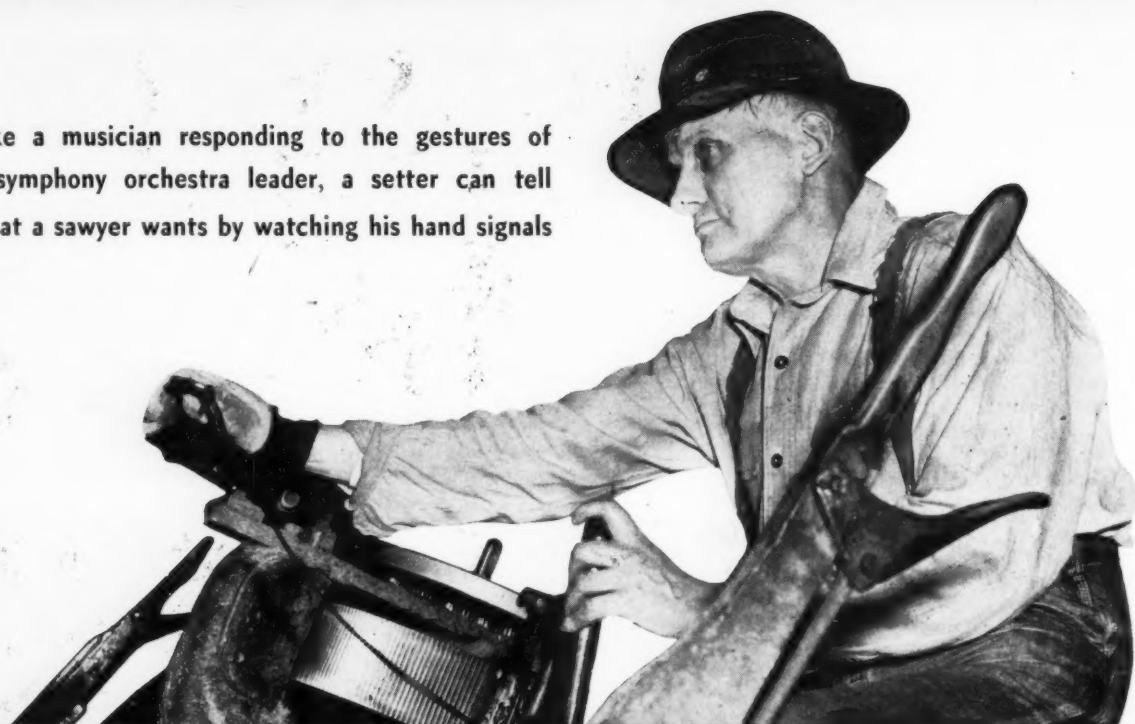
A committee on basic approaches to state legislation for watershed development headed by Mr. Liebers reported that when possible full use should be made of existing agencies—such as soil conservation districts—and that in some instances it might prove desirable to expand the powers of these existing agencies. Legislatures, Mr. Liebers said, have an inherent dislike of new agencies and prefer to make use of those already in existence. In some cases, however, watershed districts must be created with the power to "tax, condemn, to manage appropriated funds and to enter into contracts," he declared. Where such measures are necessary, maximum local cooperation must be permitted and assured, Mr. Liebers said.

Desirability of working through adequate State Natural Resources Departments such as that of California, Kentucky or North Dakota

in implementing Public Law 566 was stressed by Orville W. Chinn, of Kentucky's Strip Mining and Reclamation Commission, in a report on Development of Adequate State Agencies. As of now, State Soil Conservation Agencies have been designated to work with Federal agencies under Public Law 566 in 18 states; Departments of Conservation or Natural Resources in four states; Governor's Advisory Committees, four states; State Department of Agriculture, two states; State Engineers, two states; a Flood Control and Water Resources Commission in one state; and various types of commissions and boards in the others.

A committee on public understanding headed by Dwight Payton, of Overbrook, Kansas, stressed that promoting understanding of watersheds is basically a selling job. "First we must sell acceptance of the program, then desire for it," Mr. Payton said. Possibility of enlisting the aid of the Advertising Council of America in this selling job was raised from the floor and will be explored.

Like a musician responding to the gestures of a symphony orchestra leader, a setter can tell what a sawyer wants by watching his hand signals



Maestros of the Bandsaw

By BOB FORBES

"BILL'S hand signals always come at the right moment. His rhythm in moving the log carriage back and forth is just right, too," thinks Jasper Hogweide, day-shift log setter on the No. 2 head rig of the Northwest Timber Company sawmill, Coeur d'Alene, Idaho. Jasper and Bill Harris, No. 2 head rig sawyer, have struck each other just right most of the time for the past 26 years.

Bill and Jasper operate their levers, push buttons and set works with all the coordination of musicians playing a piano duet. Together they saw select, shop and common boards from logs in a steady flow that establishes the pattern for operations in the rest of the sawmill. Daily, lumber comes from their band saw to the extent of 45,000 board feet—half of the mill's capacity.

Products of this harmonious teamwork are, in a way, better than notes of music. The boards can be seen and appreciated for years to come.

The two men started working as a team at the old Winton Lumber Company mill in Coeur d'Alene in 1929. For some at-the-time good reason, each of them has strayed away from the other for short periods. Jasper claims he had itchy feet. Bill once was fascinated by the nine-foot-diameter sugar pines of California and moved south, but he was back in Idaho and working with Jasper again in less than a year.

In the quarter century of near-steady partnership, Jasper estimates, "I've probably equalled a trip around the world, but only in 60-foot-long 'shotgun-feed' swings of a log carriage on one track. Bill moved the carriage nearly the same distance each time most of that period, too. Irregular lengths of carriage moves are tiring to a setter. That's one reason why I like Bill."

Carriage moves that barely clear the band saw's steel ribbon one time, then go clear back to the bumpers the next, do not permit a setter to plan ahead and establish rhythm in his work. Smaller jerks of a carriage

have the same effect, Jasper thinks. He sees in Bill's sure hand on the feed lever a guarantee of smooth travel to and fro.

The narrow box in which Bill sits when on the job is confining—not at all like piano-bench intimacy with his partner. He can never hope "to get around the world," even in short hops, but his work is still the most varied and interesting in the whole sawmill. "Breaking down" a log into its most valuable boards is also one of the few sawmill jobs which involves split-second decisions.

Each log is a different problem—possibly in its checks, splits, center rot or "mule-ear" knots.

A sawyer can easily "waste his wages" in judging the contents of logs, which he begins in the few seconds when they roll on the carriage, are clamped securely by "dogs" of steel and are set square with the saw by a taper lever. At the Northwest sawmill, the last jobs are handled by a "dogger" riding the carriage with the setter. In fact, Jasper alternates

between setting and dogging during each day.

Sawyer Bill has to "look through several inches of moving wood" when he signals to advance the set works a few inches. He must keep one saw line ahead of the log face in front of him because of the double-cut band saw. The saw, with teeth on both of its edges, operates too speedily for transfer of signals immediately before each saw line.

Nimble fingers of a pianist are required in Bill's work, too, for the racket of saw and carriage makes necessary the relay of instructions by sign language. Northern Idaho timber calls for a dozen hand signals of the two dozen more or less standard signals used in different parts of the country.

For example, thumb and index finger extended from a half closed fist means to a setter a one-and-a-half-inch board. A sawyer's four fingers outstretched, palm toward the log, signifies a four-inch-thick board. A clenched fist means a 10-inch-thick cut, usually to be resawn by another sawmill machine.

A setter's few hand signals are made to acknowledge the sawyer's signals, or to indicate that he is following the normal procedure of log turning.

An uninformed visitor to a sawmill sees only the constant carriage movement back and forth and the narrow confines of the sawyer's box. "What monotonous, tiring jobs the head-saw men must have," he reflects. But neither Bill nor Jasper thinks of his work in that light, although each will admit the possibility.

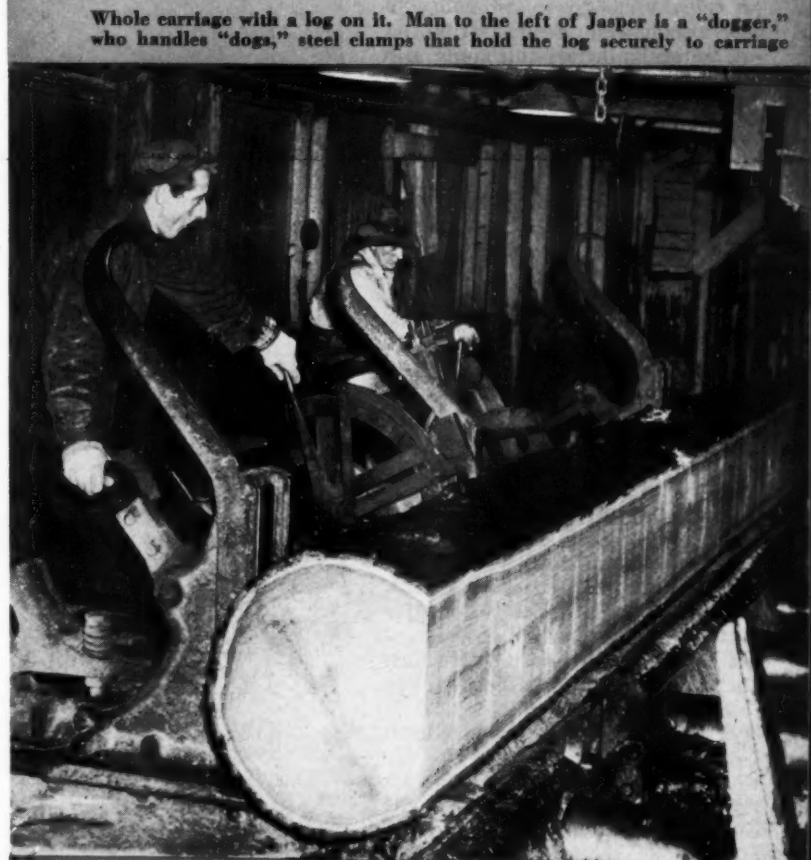
The "log butcher," who Jasper knew during his youth in northern Saskatchewan, Canada, must have gotten extremely tired before the end of his day. He was forced by the limited sawmilling season to cut for quantity, not quality, and so was just another cog in the works.

"The thrill one gets from sawing a select log to the best advantage on split-second decisions," says Bill, "is often greater than the paycheck thrill. At least, it brings a more prideful glow."

Sawyers, like Bill, will always command respect and a high scale of wages in the inland Pacific Northwest. But smaller sawmills there are installing automatic, electric or compressed-air-operated set works and eliminating Jasper's job. Large mills of the region will continue to need both sawmill maestros, however.



Log setter Jasper Hogweide, left, has his right hand on the set works in response to sawyer Bill Harris' signal from the sawyer's box, right



Whole carriage with a log on it. Man to the left of Jasper is a "dogger," who handles "dogs," steel clamps that hold the log securely to carriage

Pivotal figure in a race that tipped the balance of power in the Senate, Richard Neuberger, a writer, made "conservation" the chief theme in his successful Oregon campaign. That's why conservationists are now asking

What about Richard Neuberger?

By MERLIN BLAIS

OREGON'S election of a new United States senator, Richard L. Neuberger, quite likely will exert considerable influence on power, timber and natural resource legislation and policies during the coming six years. Neuberger, a tireless and forceful Democrat of the New Deal school, concentrated virtually his entire campaign on issues in that field.

During his months of stumping his state, he hammered away at what he called the "giveaway" policy of the Eisenhower administration on oil, timber, minerals and lands, and at its "partnership" plan for further hydroelectric development in the Columbia watershed.

He aimed his verbal attack not only against his opponent, Senator Guy Cordon, but also at Interior Secretary Douglas McKay, who had been popular as Oregon governor. He rebuked them for policies contrary to those shaped by Republicans of the past—Theodore Roosevelt, Gifford Pinchot, George W. Norris, and Oregon's Charles McNary.

Unlike the challenger in a duel, Neuberger chose his own weapons. To these arguments he added others on unemployment, income taxes, social security and labor laws. And they helped this 41-year-old (Neuberger was 42 on December 26) free-lance writer and state senator win a seat in the U. S. Senate. He edged in by just under one vote per precinct—but Neuberger is the first Democrat elected to that high office from Oregon in 40 years.

What are the goals this freshman senator is taking along to the nation's capital? In an interview for *AMERICAN FORESTS*, he set forth some of those guideposts. On power development, his chief campaign theme:

In an effort to answer the above question, *American Forests* asked Merlin Blais, Portland *Oregonian* newspaperman, to interview Mr. Neuberger. The senator's views, published in accordance with our aim to introduce material on all new developments likely to exert an influence on future resources programs, are presented here in their entirety. And since Senator Neuberger already seems destined to become a controversial figure, *American Forests* will also welcome any comments on his views that members may care to make.—Editor

1) Restore the general power program that prevailed prior to 1952. Restore the famed "308" report of the Corps of Army Engineers as the master plan for developing the Columbia river, which contains close to 40 percent of the nation's hydroelectric potential. This report recommends that all dams on the main stem be federal, including the Snake river and its controversial Hells Canyon site.

2) Retain the preference clause, which requires that first priority for electricity from federal dams be given to city, district and other publicly-owned distributing utilities.

3) Continue federal building of transmission lines to deliver the power to major load centers, where distribution should be by the system locally preferred. Retain the postage stamp, or delivered rates, as a means of fostering region-wide growth.

4) Support the Rural Electrification Administration.

5) Oppose the partnership program favored by the present admin-

istration for joint development by states, districts and private utilities with the federal government.

The new Oregon senator strongly favors a high government dam at Hells Canyon, and will do what he can to block Idaho Power Company's plan for three low-level dams. He has repeatedly asked Secretary McKay why he favors a government-built Libby dam in Montana, but not Hells Canyon, when both are backed in the 308 study.

"I have no objection to private utilities building projects on the smaller rivers, where they are not found to be outweighed by conflicting public uses," he added.

Neuberger stated he was not unalterably opposed to partnership projects, but they must meet three tests: each must not be a lesser development than that designated in the 308 report; rates for resulting current must be as low as a federal project would provide; and they must fit in with coordinated development as to water levels, power pool, irrigation and other matters affecting the entire Columbia system.

But the new senator remarked it might be better to postpone certain controversial projects a few years, rather than risk having them inadequately developed.

Asked if he thought a Congress perennially beset with budget troubles could be persuaded to appropriate new billions of dollars for Pacific Northwest power development, Neuberger declared:

"The main obstacle to further federal development has been coming from my own region. Until the Hells Canyon fight began, an orderly development was in progress.

"In 1946 the five major private



Mr. Neuberger (right), who had the active support of former Forest Service Chief Lyle F. Watts (left) in his senatorial bid, will seek—and probably get—a post on the Senate Agriculture and Forestry Committee

utilities prepared a report predicting the region would be glutted with a big power surplus by 1950. This never happened, of course, but it doubtless influenced Congress."

As for cost of this regional program to U.S. taxpayers, he said returns on Bonneville Power Administration's sales have been sufficient to pay off about 40 percent of the cost of Bonneville dam and about 20 percent on the newer and costlier Grand Coulee dam.

In opposing the partnership plan as it looks to him at present, the Oregon senator declared that even the huge national debt does not make it necessary for Uncle Sam to relinquish the one feature of river projects that returns any money to the treasury, namely, the power generating facilities, while retaining

the burden of the non-reimbursing benefits.

The Roanoke Rapids court decision which was cited when Interior withdrew its case for a public Hells Canyon dam from before the Federal Power Commission is no mandate at all, in his opinion. It merely held that FPC could legally favor a private power company's application if it wished, but left the way open for government agencies to intervene in such cases, he opined.

"The administration apparently intends to withdraw from any site where a private utility wants the rights, regardless of multi-purpose aspects," he said. "No private utility has asked for the Libby site, so a federal dam there is all right."

"This reverses the policy of those two great Republicans, Teddy

Roosevelt and Gifford Pinchot, who preserved power sites many decades ago by using the Forest Reserve Act to create ranger station locations at power sites on the best mountain rivers.

"In this power controversy, McKay and Cordon are the real radicals, as I favor going back to the Roosevelt-Pinchot policies. The first preference clause favoring public power distributing agencies appeared in the Reclamation Act of 1906, which gave first rights to non-profit agencies.

"In the Bonneville Act of 1937, Republican Senator Charles McNary included the preference clause. Chief Justice Earl Warren, while still governor of California, defended the preference clause. . .

"It prevents private utilities from getting all the power. Even in Oregon, where only a few public power agencies are operating compared to Washington, they serve as a yardstick and brake on rate-boosting tendencies of private utilities. The threat of public power holds down private rates."

In his energetic Oregon campaign, Neuberger won considerable support from conservation groups. Their efforts were coordinated by Lyle F. Watts, who retired two years ago after 10 years as chief of the U.S. Forest service.

The conservationist theme was cleverly dramatized. All campaign mail carried Lewis & Clark commemorative stamps. At county fairs and elsewhere his cohorts distributed, instead of match books, packets of similar size containing alta fescue grass seed, with the suggestion hunters scatter the seed when out on the range.

Printed inside the packets was this provocative statement: "Today there is a movement underway to give away all of our resources piecemeal . . . a forest here . . . a park there . . . oil here . . . a fabulous damsite there. This giveaway program is what the doctors would call an irreversible operation. Once given away these resources are gone for good. . ."

Neuberger successfully clubbed Cordon — and McKay — with the "giveaway" charge. Pinchot, he said, devised the master plan for using the public forests, advocating "the greatest good for the greatest number, in the long run."

"This blended together in an orderly pattern all the normal uses of the forest reserves—timber-cut-
(Turn to page 50)



View of Wichita Mountains Wildlife Refuge as seen from the top of Mt. Scott

THE WICHITA REFUGE

By WILL BARKER

THERE is supposed to be gold in the Wichita Mountains. Some of it may be part of the James Boys' loot. Then again it might be bullion from an ambushed Spanish pack train. Or on the other hand it could be a mine whose location has been long forgotten. *Quien sabe?* But for anyone who likes to do a spot of treasure hunting, the Wichitas in southwestern Oklahoma are a mighty fine place to prospect.

More folklore than fact, much of this treasure is on land owned by your Uncle Sam—the Wichita Mountains Wildlife Refuge. Not far from Cache on U. S. Highway 62, and managed by the Fish and Wildlife Service, Wichita Refuge is worth visiting on one of your vacation junkets. After all, there are not many places in the nation that offer buried treasure, live habitat groups, legends of outlaws and Indians, and outdoor recreation packaged in such an attractive setting.

Since money is important on a vacation, let's look into the first of Wichita's attractions, buried or lost treasure, at once. The James' loot is said to be around two million dollars. Although that amount does not have the same buying power today as it did in the days when Frank and Jesse were riding the outlaw trail, it is still a sum worth unearthing.

AMERICAN FORESTS





Next time you take a vacation junket, keep in mind Oklahoma's Wichita Mountains Wildlife Refuge. There you'll find everything from tame lizards to treasure

extreme northwestern section of the Refuge.

There is a good reason for the name of the spot where this last-mentioned treasure is buried. One day in 1883, a band of Osages swooped down on a Kiowa village, occupied by only the young and the old, as all the warriors were off on a buffalo hunt. The Osages slit their victims' throats, then cut off their heads. The severed heads were placed in the water buckets of the Kiowas as offerings to Osage gods. One of these buckets is on display at the nearby Fort Sill Museum.

The Wichita Mountains get their name from a tribe that lived in the area, though the lands of the Ref-

home to be known as Star House, a designation in use today.

Quanah lived in Star House with his five wives. And it was about his matrimonial setup that Quanah was given some advice by Teddy Roosevelt on "how to walk the white man's road." Teddy advised Quanah to give up all of his wives but one. Quanah's reply was: "You tell 'em which one I keep!"

History does not record Teddy's comment to Quanah, but history does show that by one of his executive orders in 1905, the Wichita Game Preserve was created on lands managed by the National Forest Service. Congress earmarked \$15,000 to enclose 8,000 acres of the preserve,

ing—something Frank was never able to do.

The two million, said by old timers to be the net from several bank and train robberies, is buried somewhere along the old road between Fort Sill and the Keeche Hills to the northeast. After Jesse was shot by Bob Ford, the dirty little coward of the ballad about Jesse's being killed, and all the rest of the gang were either in jail or boothill, Frank gave himself-up. He was tried and acquitted.

From the day he won his freedom, Frank began to search for his treasure of the Wichitas. He bought a small farm for his treasure-hunting operations, and each day rode at a headlong pace from his farm to Cache Creek, hoping that his subconscious would recall the exact spot where the booty had been buried. But Frank's subconscious refused to cooperate, and before he died he wore out six horses in a vain effort to locate the loot.

Legends of other cached treasure abound in the Wichitas. Gold hidden by survivors of an ambushed Spanish pack train is presumably hidden at the foot of Twin Mountains. A great shipment of government gold, so the story runs, was lost in the sands and waters of Cache Creek. And there is still more treasure at Cut Throat Gap, in the



Collared lizards, known to people around the refuge as mountain boomers. These two gentle souls live very near the refuge office

uge were also the former stamping grounds for other tribes including the Comanches. Quanah Parker, last Comanche war chief, was at home in the Wichitas. Born around 1845, Quanah was the son of Peta Nokoni and Cynthia Ann Parker, a white woman kidnapped when she was nine years old by the Comanches. The last time Quanah rode at the head of his tribe was when the Comanches surrendered tribal rule at Fort Sill in 1874.

Just south of the Refuge still stands the home of Quanah Parker. It is an eight-room house with a four-sided roof, decorated with an equal number of stars. These celestial decorations caused Quanah's

and the American Bison Society provided the 15 bison released in the enclosure on October 11, 1907.

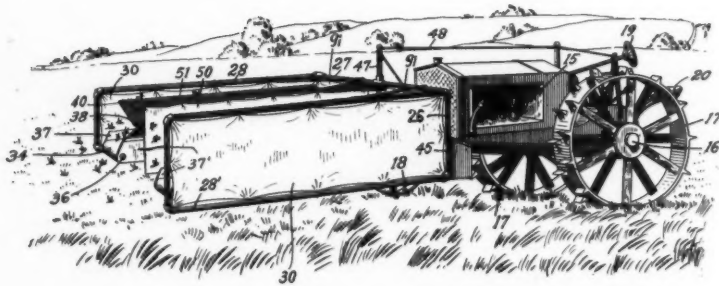
In the original herd of buffaloes was Black Dog, the biggest bison ever weighed. He tipped the scales at one and two-fifths tons. General Lawton, the last of the original herd, died in November 1930, a patriarch 25 years of age. Today Wichita, now a 60,000-acre refuge, harbors a buffalo herd of more than 800 animals.

There are also herds of elk, antelope, and white-tailed deer at Wichita. America's largest herd of long-horn cattle is here, too, and numbers about 350. These longhorns are
(Turn to page 56)

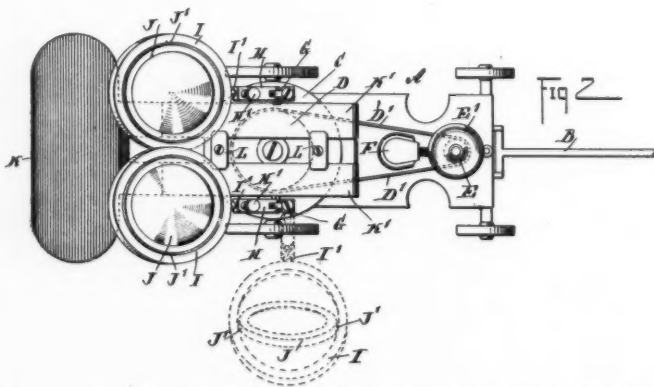
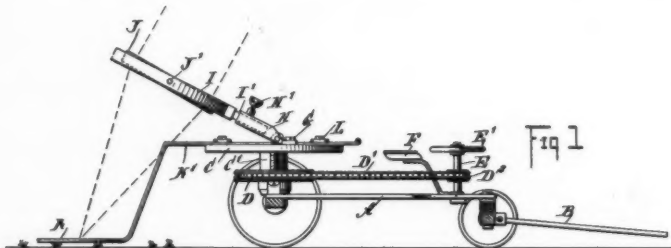
Of Men, Trees and

By MIKE RIVISE

The fruit of man's inventive genius often is strange and wonderful.
Here are a few contraptions to which both these adjectives apply



Anyone for grasshopper harvesting? This machine, vintage of 1919, collects "insects, particularly of the grasshopper type, electrocutes same, delivers them freshly-killed for use as poultry food"



A stump burner and insect exterminator "which is simple and durable in construction, very effective in operation and arranged to readily set stumps on fire . . . or for cracking rocks or for other purposes"

WHEN man began inventing he started the long climb to civilization. But it took quite some time to get started.

The force of steam was known by the ancients, but it was never utilized for lifting the heavy burdens off man's back until the invention of the steam engine. Birds flew in the sight of man for thousands of years before inventors used them as models for our present-day planes. And primitive man saw logs floating down the rivers day by day before some unknown inventor made a boat out of one of them.

Inventions come about when restless souls are not satisfied with present methods of doing things or are discontented with the contour of natural things about us. Mr. Roy must have been one of these individuals.

He wanted to reverse the position of the branches of the trees that grew about him. The limbs on the right side would grow on the left side and vice versa. Seems like a kind of "pretzel tree."

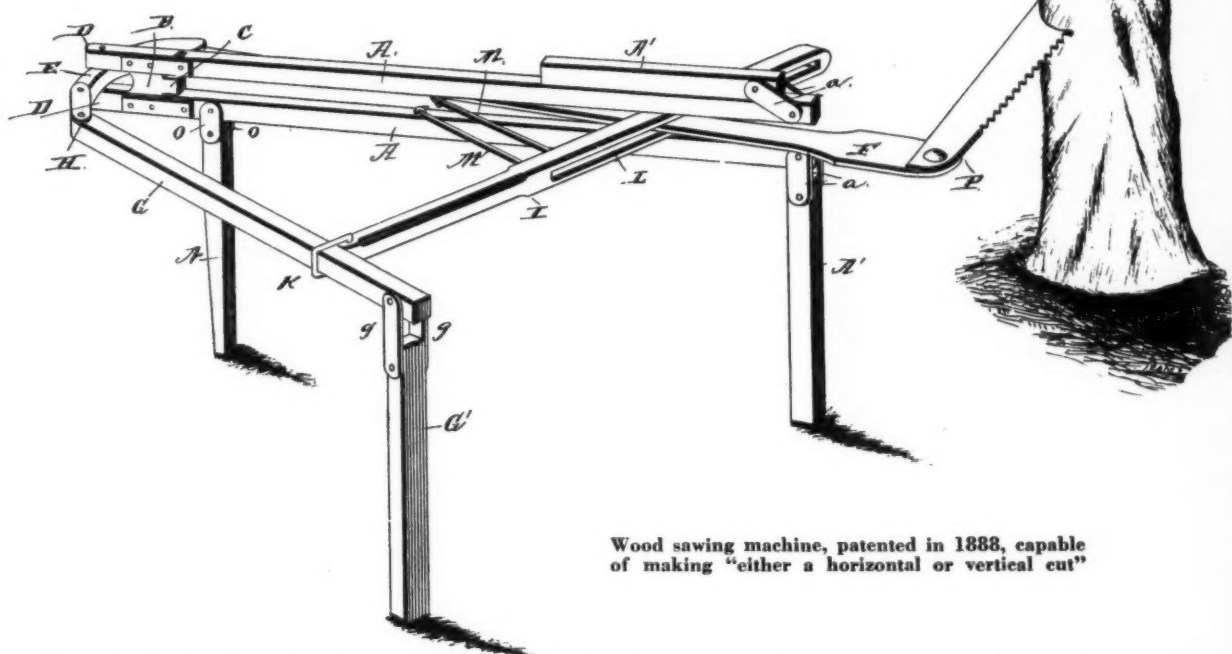
Mr. Roy says: "My invention relates to an improved form of tree, the grain or woody fibre of which has so been bent by artificial means, during the process of growth, that the branch elements would hang out from the opposite side of the tree."

This inventor believed that his trees would be shorter, sturdier, bear more fruit and last longer than the conventional type. Apparently the patent examiners at Washington, D. C. pondered a long time about the possibility of "pretzel forests" all over the world. They took seven years to make up their minds.

On March 1, 1927, Mr. Roy got his patent, No. 1,619,272.

Whether or not Mr. Roy ever planted his "pretzel tree" is not known. But the author discovered a "pretzel tree" on his recent trip to the beautiful Isle of Pines near Cuba.

Inventions



Wood sawing machine, patented in 1888, capable of making "either a horizontal or vertical cut"

It was the outstanding attraction in Mother Jones' Jungle. She claims she or her late husband didn't plant it. It just grew.

I would like to believe that Mr. Roy planted it there.

More recently, Louis J. Farley of Wapato, Washington received a patent for his method of pollinating fruit and trees by *shotgun*. He claims his method is better than nature's way.

Mr. Farley loads his shells, in lieu of shot, with pollen and a carrier such as pulverized dried plants or powdered skim milk, and fires into the blossoming part of the tree. Direct hits are made on some blossoms and the pollen settles on others. In practice, he uses from one to four shells a tree, depending on the extent of the foliage or blossom-bearing portion.

About 45 years earlier, James M. Dennis of Cambridge City, Indiana invented a "Machine for Fecundation of Plants." This inventor also wanted to improve on nature. He claimed that dependence on bees and other insects was too unreliable.

In his patent application he stated: "My present invention relates to a machine for fertilizing clover or the like by mechanical

means which has been done heretofore by natural means." Further: "A further object to provide mechanical means for the fecundation of plants, by the employment of which the pollen of the plants may be properly distributed and interchanged, in order that fertile and healthy seed may be produced."

His machine, which can be drawn by a horse, is intended to be drawn to and fro over a field of blooming plants, at a time when the pollen of the bloom is in condition to be distributed.

As the machine goes forward or in any direction a plurality of fingers gathers and distributes the pollen.

This ingenious invention was patented on June 29, 1909.

A recent patent was granted to a tool for stabbing and poisoning trees. It has a tubular handle that serves as a container for the poison. At the opposite end is a sharp, spoonshaped blade. Holding both hands, the user jabs the blade through the bark, and the shock of the blow opens a valve long enough to release a tablespoonful of poison to mingle with the sap. This is supposed to be an improvement over other tree-killers which sprayed the poison or injected it into the ground

to the detriment of surrounding plants.

This poison-jabber may give some of these murder mystery writers a new gimmick.

For lazy nut pickers there is a new mechanism that shakes the tree.

The mechanical shaker is mounted on the nose of a tractor and connected by belt to the tractor engine. A cable runs from the shaker to the base of a large tree branch. By a clever cam arrangement the cable is jerked with a snap action so that the tree is shaken severely in a series of jerks.

Result! All the nuts you want. But keep away from area of the shaken tree or there maybe an unexpected cracked nut.

Talking about cracked nuts there are several inventions for that very purpose. They are designed to crack all size of nuts from pecans to coconuts.

Another invention for picking nuts from the ground without bending over was granted recently to Elsie J. Aycock of Brooklet, Ga. Gripping a handle, the operator pushes along the ground a wire mesh box with an opening near one corner. A metal finger projects from the box. The operator pulls the

cord thereby moving the finger and flicking the nuts inside. What a nutty ideal!

This thought of saving time and energy is evidenced in a wood-sawing invention back in 1888.

The inventor claimed: "... And it has for its object to provide a device with which either a log or standing tree may be sawed, or, in other words, to provide a device with which either a vertical or a horizontal cut may be made."

Further: "It is my object to so construct the device that it may be folded up compactly for transportation."

The inventor describes the component parts of the device as; legs, ears and tongues. When the contraption is set up on its legs and the ears and tongue properly arranged according to detailed directions you do the sawing with a lever. So says the inventor, and the patent examiner must have believed him for

the inventor received his patent five months after he applied for it. Maybe the patent examiner was in a hurry to get out and use it on his own trees.

Are you bothered with stumps and insects? Well, Victor Rieke patented his solution on October 18, 1898, for his "Stump Burner and Insect Exterminator."

Here is his simple plan.

He mounted a lens and a metallic plate on a vehicle. Then brought the strange contraption to the stump which was to be removed. The sun was focused on the lens. The metallic plate was placed under the lens and over the stump. The sun heated the lens which in time was supposed to heat the plate. Presto—the stump was burnt to a crisp in a few minutes.

Simple? The same procedure can be used on any unwanted stones and rocks. They will be broken into small units by the heat and then easily removed.

Too many insects, grasshoppers, plant-lice around the homestead? Just passing the "hot plate" over the grass a few times will write *finis* to all unwanted plant life.

If there are still unwanted tree stumps, rocks and insects in Renville County of Minnesota it certainly is not due to Mr. Rieke. His "hot plate" is there for any one to use.

About 21 years later Walter DeWitt Kemp of New York City topped Mr. Rieke with his "Grasshopper Harvester."

This invention aims at getting rid of the grasshopper pest by electrocution. This non-poisonous killing method leaves the dead insects fit to be used as poultry food. Grasshoppers, according to the inventor, are considered a delicacy by discerning chickens. Thus, this device allows the farmer to treat his poultry to its favorite dish after clearing his fields of the destructive hoppers.

The machine is equipped with frames which extend several feet in front of the machine. These frames are covered with some textile material. Inside these frames, running across them, are electrically operating nettings. When the hoppers hit the netting, they are killed by the electric shock. They fall into a trap and are later removed for poultry food.

This ingenious machine is one of those gadgets that must be seen to be believed.

Elton F. Reid was granted a patent for a new type of irrigating machine. Ice pellets were shot into the roots of plants from a tractor. The ice was manufactured in the tractor while it proceeded over the ground. And you didn't need a sharpshooter's medal to operate the ice gun. These plants would be "cool as a cucumber."

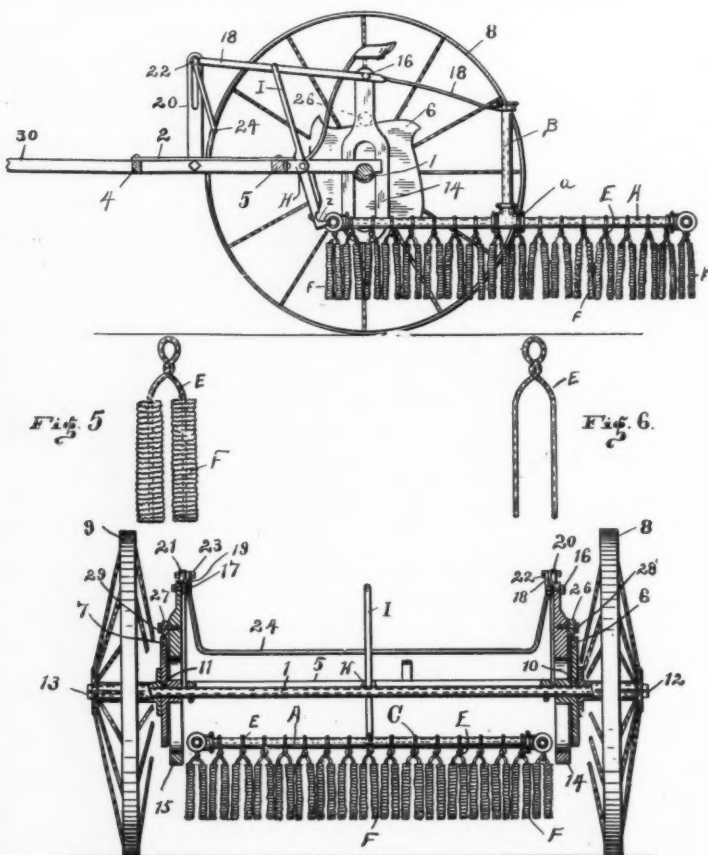
This early "air-conditioning" unit could also serve to keep the farmers down Texas way cool while working their fields. You see, Reid hailed from Waco.

For camping there are many items of unusual design and intent.

A "combined cooking stove, wheelbarrow and sled" leads the parade. Actually it is a wheelbarrow on sled runners, with a grating and stove-pot set in the bottom center. Special features are that the cooking apparatus is set high enough off the ground to permit the sled runners ample clearance and a lid which folds down over the grating and cook pot. This lid keeps it clean of

(Turn to page 44)

This unusual machine was designed to revolutionize the fecundation of plants. Patent for it was granted in 1909



SHERMAN Avenue neighbors of Mrs. Joseph Shimek of South Milwaukee, Wisconsin, have long regarded her as one of the kindest-hearted women they know. So they weren't greatly surprised to hear one cold April day last year that she had rescued five abandoned baby squirrels from a sealed-off kitchen chimney and was preparing to raise them.

Raising five baby squirrels, each the size of your little finger to start with, presents certain difficulties. To keep them warm, Mrs. Shimek cradled them in a padded box by a radiator. But since the radiator was not always warm it was sometimes necessary to place hot water bottles under their padding. This, the squirrels liked very well.

Finding the proper feeding formula also required experimentation. Warmed whole milk mixed with a dash of syrup proved most satisfac-

tory. Later, Upjohn's super drops were added to this formula. After that, graham crackers and soft nutmeats made a hit with the infants. Originally, all were fed from an eye dropper.

"It was very much like caring for human babies," Mrs. Shimek comments. "You keep them clean, feed them well and let them have all the sleep they require. And nothing, of course, should be permitted to interfere with their schedule. Since they all wanted to be fed at the same time, they demanded as they grew, the same treatment so eventually my husband or neighbors had to help out with the feeding."

As they grew, they became more frisky and, according to Mrs. Shimek their personalities began to develop. Three of the brood proved to be girls and were named Brazillia, Cassia and Hazel. The two boys were dubbed Phillie and Wallie. As in all families

there was one clown and Wallie, the runt of the litter, proved to be it.

"Contrary to what we expected, the girls grew larger than the boys," Mrs. Shimek reports. "Brazillia was the largest, Cassia came next and Hazel was the smallest of the girls. Their clean habits amazed me. They never wet their beds. At one end of their carton I placed several pads of an old cotton blanket and this was their rest room."

Wallie, the clown, was also the problem child of the family. He was still on the eye dropper when the others had graduated to small plastic dishes. Noting that he was losing weight, Mrs. Shimek resolved to try a trick she had seen a young mother try on a child that seemed to have difficulty swallowing. That was to hold the squirrel's nose shut while feeding him. It worked.

As the brood grew older they re-
(Turn to page 57)

Mr. and Mrs. Joseph Shimek with "boys" and "girls" who made up their squirrel family before the little pets—one by one—either returned to nature or died

And Then There Were None



BLACK ASH

Fraxinus nigra, Marshall



Pinnately compound leaves are from 12 to 16 inches long with seven to 13 oblong to oblong-lanceolate, long-pointed leaflets

Seeds of the black ash ripen in August and September and usually soon fall. However, some may remain on tree during the winter



GROWING to a height of 80 to 90 feet and rarely exceeding 20 inches in diameter, black ash is the slenderest broadleaf tree in the forest. It has a straight columnar trunk with little taper and is often clear of branches for 50 feet. The crown is rounded and is made up of a few short branches; it is narrow under forest conditions but much wider when grown in the open. The twigs are stout, ashy gray, marked by large pale lenticels and roughened by large, conspicuous, circular to semi-circular leaf scars.

Black ash is distinctly a northern species, growing from the Gulf of St. Lawrence to Manitoba and south to Minnesota, northeastern Iowa, Indiana, Ohio, Pennsylvania and Maryland. It is primarily a wet-soil tree of northern lowlands and foothills and is usually confined to the borders of swamps, streams and lakes. It makes its best growth on deep, fertile, moist or wet soil often in company with northern white-cedar, balsam fir, red maple, black spruce and tamarack.

The pinnately compound leaves are from 12 to 16 inches long with seven to 13 oblong to oblong-lanceolate, long-pointed leaflets four to five inches long and one to one and a half inches wide. When mature they are thin and firm, dark green and smooth above, paler and smooth below, with the exception of occasional tufts of rufous hairs along the under side of the broad, pale midrib. The margins of the leaflets have small, incurved teeth pointed toward the tip. With the exception of the terminal leaflet which has a short stem, the leaflets are attached directly to the leaf stalk. This in contrast to the leaves of white and green ash where

Bark of the black ash is light gray and smooth at first but later becomes shallowly fissured and has soft, papery scales



each side leaflet has a short stalk of its own. The leaves turn a rusty brown and fall early in the autumn.

The flowers appear before the leaves in slender, branched clusters, on shoots of the preceding season. The black ash is peculiar in that not only are the male and female flowers borne on different trees but some trees also have perfect flowers, that is, flowers with both the male and female parts.

The flat, winged, one-seeded fruit is narrowly oblong, one to one and a half inches long and about a third of an inch broad; it is surrounded by a wide, thin wing which is rounded or slightly notched at the apex. The seeds are in loose clusters eight to 10 inches long. They ripen in August and September, soon falling, but some of them may remain on the tree through the winter.

The ovate, pointed, terminal buds are dark brown to nearly black, about one-fourth of an inch long, covered by four to six scales. The lateral buds are smaller and more rounded, the first pair generally located at some distance from the end of the twig, giving the terminal bud a stalked appearance.

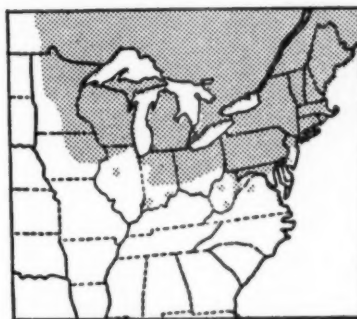
The bark is light gray and smooth at first but later becomes shallowly fissured and divided into large irregular plates with thin, soft, papery scales which rub off easily. Moderately heavy, a cubic foot of air-dry black ash wood weighs about 34 pounds. It is moderately hard, moderately strong in bending, moderately stiff and has high shock-resisting ability. The heartwood is grayish brown to brown and the narrow sapwood is whitish to light brown. Old trees generally have dark colored heartwood which is well-liked for furniture and the interior finish of houses because of its fine grain and pleasing figure. Ash is the standard wood for certain classes of handles, including the shorter handles for shovels and spades, and long handles for hoes and rakes. Although much black ash is used for handles, other species, principally white ash and green ash, are preferred for long handles because the wood of these species has higher strength values. Black ash has been much used in making splints for baskets as the wood can be easily split between the layers of annual growth. From early times pack baskets have been fabricated by the Indians of the Northeast from such splints which are obtained by pounding the green wood until it separates along the springwood pores. It is estimated that black ash makes up about one-fifth of the total ash lumber produced in the United States.

The trees are easily injured by fire, from which, however, they are generally protected by the wet locations in which they grow. They are quite free from insect attack and fungous diseases but the sapwood lumber is subject to attack by powder-post beetles which burrow through it.

Black ash is also called brown ash from the color of the heartwood. Other names sometimes applied to it are swamp ash, water ash, basket ash and hoop ash.



Flat, winged, one-seeded fruit is narrowly oblong, one to one and one half inches long



Black ash, rarely exceeding 20 inches in diameter is the slenderest broadleaf in forest



Main building of U. S. Forest Products Laboratory, maintained in co-operation with Univ. of Wisconsin



What's Going On at the Madison Lab?

By KEITH R. McCARTHY

Plenty, the visitor finds. And not the least of this activity is aimed at developing some new — and rather surprising — uses for paper



Dr. J. A. Hall, who has been director of the U. S. Forest Service research center at Madison since '51

Two visitors inspect the laboratory's "paper house," constructed from panels with paper honeycomb core



THE ancient Chinese artisan generally credited with discovery of the paper making process would stroke his beard in disbelief if he could see what they're doing with his brainchild at the U. S. Forest Products Laboratory in Madison, Wisconsin.

A "paper house" big enough for people to live in, paper overlays that improve the strength, stability, paintability and attractiveness of low-grade lumber to which they are glued, paper that retains its strength even when soaking wet, paper that has a high resistance to fire, paper floors, paper ceilings—these would be strange sights indeed to the anonymous Oriental who 22 or more centuries ago gave man what now promises to be one of his most versatile servants.

Seeing paper perform such unusual functions is wondrous also to the Twentieth Century beholder, to whom it traditionally has been a material to be used primarily for writing or wrapping.

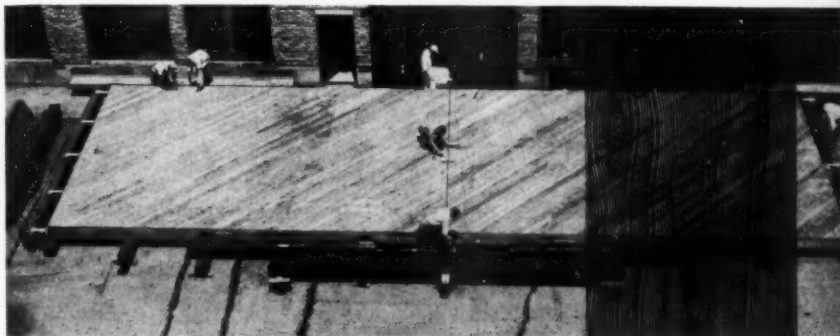
But to be convinced that these limited-use concepts soon will be passé one need but become passingly familiar with the work going on at a forest products research center like the Madison lab. There the visitor will find that materials made from wood fibers (components of wood about the size of a day-old whisker) have been elevated to a new dignity. The horizon of their uses has been broadened by research to include vistas that none but the brash would have predicted a few years ago. Among the most important of these new fields is the building business—for paper, in its various forms, has become a permanent structural material capable, under many conditions, of holding its own with metals, masonry and other conventional construction substances.

Perhaps the most significant recent technological advance that has made possible this new eminence for paper—and the following should be good news to those readers who have clutched helplessly at the moisture shredded bottom of a paper bag while the groceries cascaded all over the middle of a busy intersection—has been the development of resins and plastics that, when used in combination with paper, give it a remarkable resistance to moisture. In the precise parlance of science this doesn't mean that paper can now be "moisture proofed." It merely means that the deteriorating effects of dampness can be controlled under certain circumstances to a point

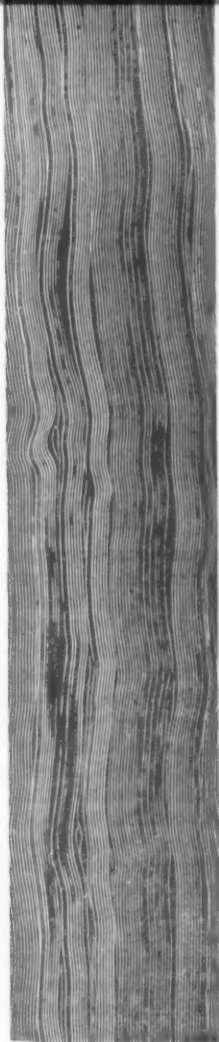
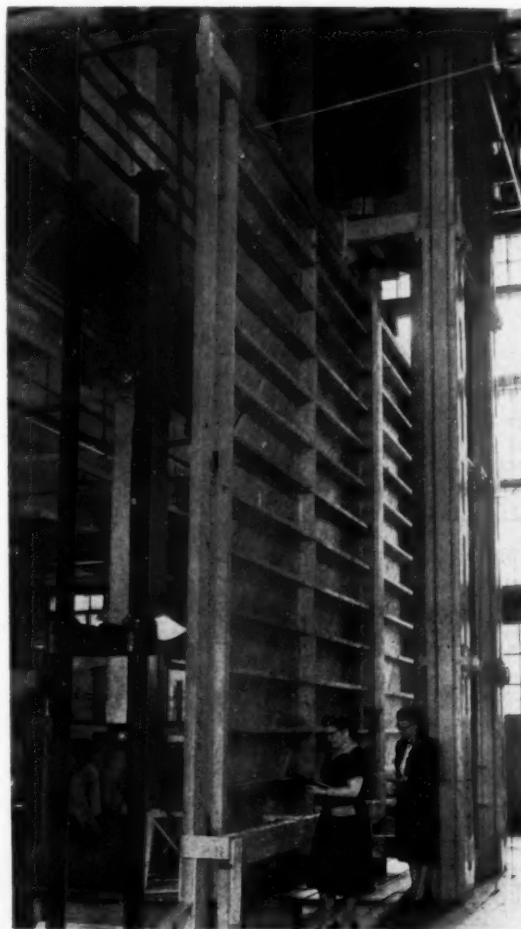
where they don't adversely affect the utility of paper.

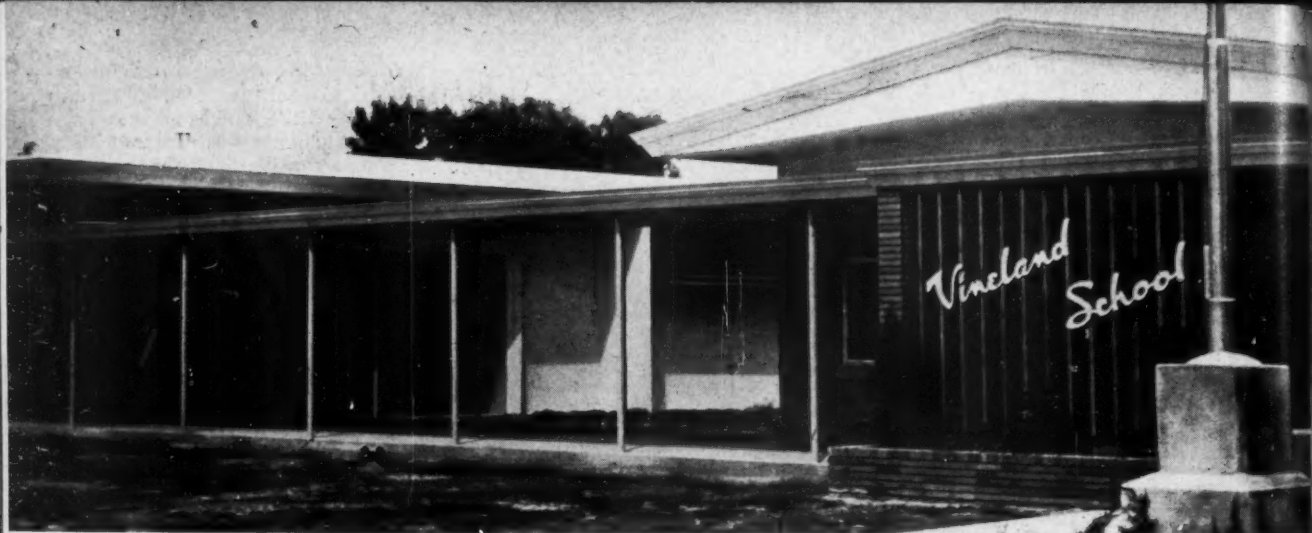
As Robert J. Seidl, a pulp and paper specialist at the Madison lab, explains it: "Although paper has always been a good material when kept dry, it has had the bad characteristic of losing practically all of its strength when it gets wet, and therefore has always been considered with

skepticism for any use involving exposure to moisture. When certain resins were developed some years ago this shortcoming was overcome. Papers now can be made that are very strong and stiff in the wet condition. They lose some strength when they are wet, but not much more than wood loses when it is wet. Consequently, wet or dry, paper can now



Testing a 60-foot haymow floor lumber diaphragm, above, and smaller floor section, below, with "million-pound machine" to determine earthquake resistance





Wood frame school undamaged after 1952 earthquake near Tehachapi, California

be made that is very close to wood itself in strength properties.

When one gets used to the somewhat revolutionary idea of thinking of paper as a building material—either by itself or in combination with other commodities, including wood, the parent product—it isn't too difficult to go along with those who believe that paper is emerging as the new Paul Bunyan of the forest.

What is called a paper honeycomb structural panel, a permanent exterior building material that can be made from wood fibers, is a good example of this thinking. Formed by bonding two strong and stiff facings to a core of paper (which may weigh less than two pounds per cubic foot), the panel has been termed by lab workers as "probably the stiffest material we can conceive for its weight." A simplified adaptation of this technique—wadding up a piece of newspaper and pressing it between the palms of the hands—gives one a quick idea of the strength potential of such a panel.

Probably because of its obvious similarity to the lunchbox variety in design, this type of panel is known at the lab as a "sandwich." The inside, or core, of the sandwich panel is of low density and can be made by corrugating paper, by forming it into figure-eight loops, by expanding it as in the old-fashioned Christmas bell, or by other methods. Insulation properties can be improved by filling the holes in the core or by foaming resins into them. The addition of fungicides or flame retardants reduces the decay and fire hazard.

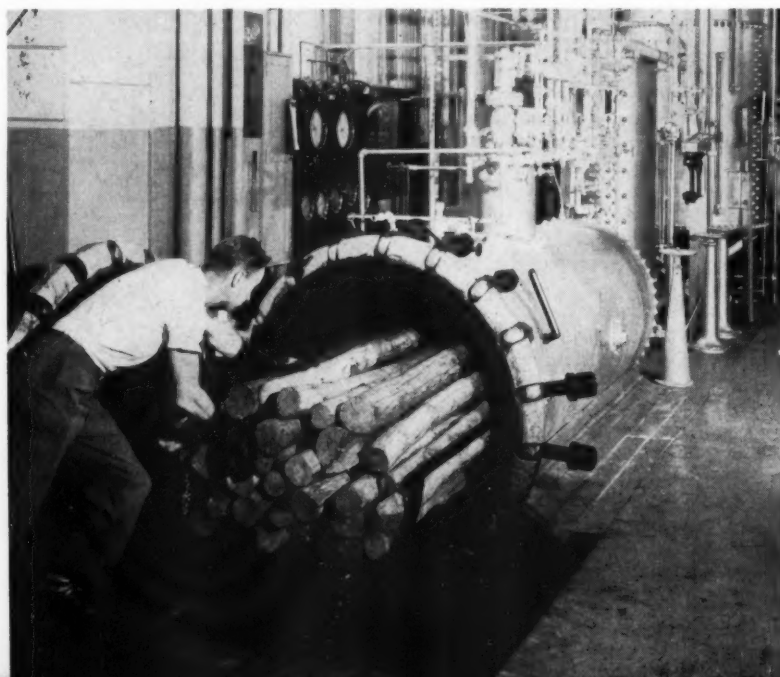
Facings for such panels can be made from plywood, hardboard, aluminum, magnesium, enameled steel, asbestos board, gypsum, or plastics. Light, strong, durable and resistant to fire, decay and moisture, they meet all requirements for use as house panels, curtain walls, warehouses, movable partitions, farm buildings, truck bodies, aircraft and boat parts, and furniture. To this list lab scientists add the optimistic belief that a number of other good, practical uses will grow out of researches now on the planning boards.

Anent the possibilities of the aforementioned paper house: scientist

Seidl sometimes surprises the uninitiated by saying that given a truck load of wood chips and a couple of barrels of resin he could build his own home—with thermal, acoustical, strength and durability characteristics on a par with those of a dwelling constructed from conventional lumber. And while Seidl (lest he be misinterpreted by the too-credulous) is quick to point out that the illustration is a gross oversimplification he uses only when dramatizing this new utility of paper, he isn't exactly talking through his test tube at that.

Early last year he told a group of

Placing a load of fence posts in a pressure cylinder for experimental treatment in the wood preservation laboratory





One-room school of reinforced concrete after 1952 'quake

builders and contractors in Illinois: "A suitable dwelling unit made from sandwich panels would require only one-third to one-half the amount of wood needed for a conventional house and yet would meet the requirements for strength, stiffness, and thermal properties. If a hardboard could be used as the facing, the entire structure could be made without the use of a single sawlog or a valuable peeler log, but rather by use of wood waste. It is estimated that for a structure about 2000 feet in area about six tons of chipped wood waste could be made into an ample supply of hardboard and core for the walls, ceiling, doors, closets and interior partitions. Almost all the material for this building would be represented in one truck load of waste wood and a couple of barrels of resin."

Despite its easy adaptability to mass manufacture (a 100-ton-a-day pulp mill could probably turn out in 24 hours enough core for 200 average sized houses), pulp and paper specialists at the Madison lab aren't predicting right now that the sandwich panel home is about to displace the conventional six-room wood rambler as the No. 1 buy on the real estate market. For one thing, they explain, tradition is against it. The average American is used to wood. He likes it. And as long as it is available at a reasonable cost he probably will continue to use it for his shelter.

However, these technologists don't seem to be interested in forcing a change in anyone's way of life. What they are interested in is making the most of the forest yield and seeing

to it that wood and wood products don't lose—through lack of application of research findings—markets to competing materials. And who knows, population pressures on forest resources being what they are, maybe the paper house will be as "traditional" at some not too distant date as the wood house is today. Look at the surge in popularity of prefabricated homes, which, incidentally, were also pioneered at the Madison lab.

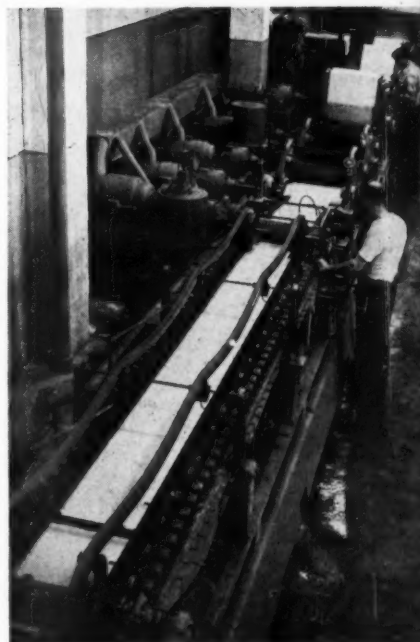
There's a slogan often encountered around the lab that gives the laymen considerable insight into the trend of one facet of scientific thinking there. The slogan—"Wood and Paper—a New Team"—is generally attributed to Dr. J. A. Hall, the lab's director since 1951, and it well describes another of FPL's more promising projects, overlaying knotty and otherwise defective or inferior lumber with paper.

This development literally has resulted in the "upgrading" of the less desirable species of lumber. Resin treated, the paper mask conceals knots, cracks and unsightly grain patterns in No. 2 common pine or other of the cheaper lumber grades, can be used to cover up defects in plywood and provides a uniform surface that is durable and takes paint well.

As Lab Director Hall points out, "research men don't bat 1,000 any more than baseball hitters do," but lab personnel seem quite optimistic about the future for extensive use of paper overlays.

In a recent report on the overlaid lumber researches, Bruce G. Heebink, an engineer at the lab, said,

The experimental paper machine is a piece of precision equipment capable of running paper ranging in absorbency from glassine to blotting papers and in thickness from tissues to paperboards



"tests and limited weathering exposures to date strongly indicate the commercial possibility of overlaid lumber."

This confidence in the ultimate potential of paper overlaid sidings and panels seems to be borne out by an exposure experiment now being carried on at the lab. An eight-foot length panel of No. 2 common pine and a panel of redwood of the same size were placed side by side on one of the lab's buildings. Both of them were painted and after more than a year's exposure it is difficult to tell one from the other. Both look good.

Researchers in the lab's pulp and paper division also have found out that gluing a strong paper to lumber can increase the dimensional sta-

bility of the wood; that is, it reduces the swelling or shrinking of wood under certain moisture or atmospheric conditions. In fact, overlaid lumber, after days of soaking in water, swelled only a little more than half as much as wood without paper.

How about the cost? A lab technician had this to say: "Of course it costs money to face lumber this way; moreover, there is no really satisfactory way to do it today. However, as you know, the redwood and cedar sidings are costly in comparison with No. 2 common lumber, so that there is a considerable cost margin on which to base further development. If this type of product is successfully developed, we would have a chance to use other species

of wood that are ordinarily not suitable because of brash grain or other defects."

He added: "Obviously, we consider these products to be in a reasonable cost range and potentially economical or we would not work on them."

The pulp and paper division also has high hopes for the use of overlaid panels for interior work, such as cabinets. The procedure here would be to cut up and edge-glue low-grade lumber into panels of convenient size, say two by six feet, and to cover both sides with paper. This panel would swell and shrink less than good lumber and would be better for edge-fastening than plywood. If such material were made at the lumber mill, a saving could

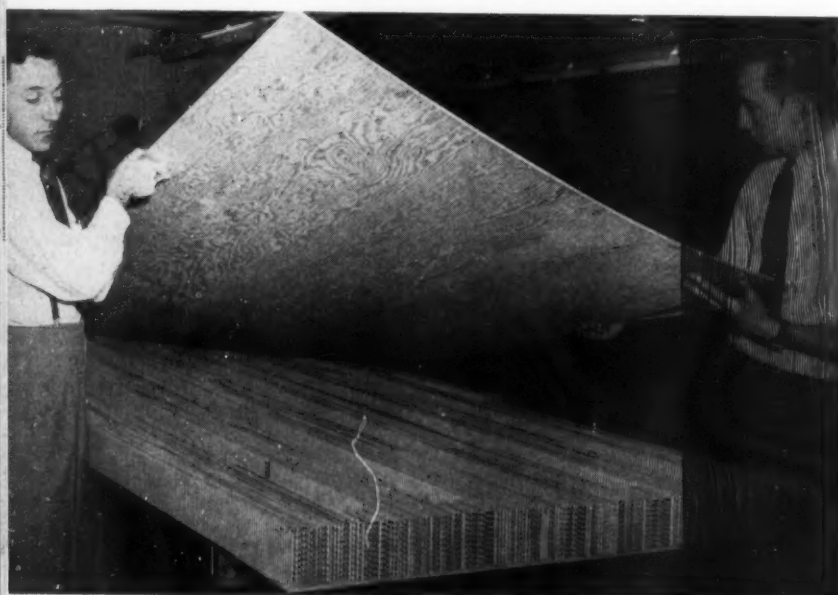
be made in the handling and shipping cost of all the waste and defects that would have to be cut out and discarded.

Heebink, Seidl and other specialists at the lab can point to an imposing list of fiber products that have made, or are making, their way into everyday use. Prominent among these are strong papers reinforced with a fiberglass scrim that gives the sheet enough strength to hold wet concrete until it sets; the rigid fiber tubes used in slab floors for perimeter heating; hardboards with the new striated, patterned, or corrugated textures that increase their acceptability; the enameled hardboards for kitchen and bathroom walls; the new developments of thin paper plastics or rubber-filled and embossed papers that can be used for wall coverings; paper plastics glued to plywood for flooring (the lobby floor at the lab is paper plastic glued to plywood); or the acoustical ceiling panel made from paper honeycomb flutes diagonal to the facings so that sound entering the material can't bounce straight out again.

Incidentally, the facing for the acoustical ceiling with which the lab is experimenting is white-pocket Douglasfir. The holes in this disease-ravaged wood—artistically arranged by nature—provide entry for the sound and also make an attractive panel. The West has a lot of this diseased Douglasfir and acoustical panels may prove to be one way of making use of it.

In many ways, the pulp and paper division at Madison might be likened to an economy-minded housewife who makes a tasty and nourishing dish from food scraps and leftovers, for these scientists are finding uses for scraps and leftovers, too. This is generally called "utilization" in professional circles, but what it means in simple terms is getting the most possible productivity out of every chip, twig or sawlog that has its origin in the forest. It means putting waste to work.

As Seidl told the Illinois homebuilders: "No matter how well we manage the forests for lumber or how wisely we use the lumber products, we will always have this waste. As long as we must make square boards from round trees, or thin the forests, or dispose of crippled or oddly shaped trees, we are creating new material for fibers. It would be nice if we could make low-cost, synthetic lumber in board form from all this waste, but we are not even



Applying a plywood facing to the paper honeycomb core. Lab workers have high hopes for this type of panel for structural use

Resin-impregnated kraft paper bonded to No. 2 common pine effectively hides knots and other defects and "upgrades" the material





Photo courtesy of Borden Co.

Effective demonstration of fire resistance of treated, laminated wood beam. Note melted metal beams

coming close to achieving this yet.

"However, some of the fiber products that we make are doing as much as, and perhaps more than, we could expect of wood itself in the past for certain applications. Their greater use represents a natural evolution of the forest products industries. These new products, when they arrive, should be welcomed as strong and useful products of the broad industry, and not with pessimism as products that are likely to further depress the sale of lumber or introduce some new complication in building.

"Importance from a resource or conservation standpoint is the fact that we can ask these fiber industries (the fiber portion of the wood industry) to pay a heavy share of the cost of managing forests to produce our No. 1 product, lumber. To say that more simply, we are now getting lumber more cheaply than we might because the fiber products pay part of the cost of making the lumber—by consuming the waste at a profit."

Of course, the pulp and paper research going on at Madison is only a part of the laboratory's function. Accomplishments of the other divisions (listed on page 39) are of equal significance and it would take volumes to detail their number and extent. In fact, during the little more than half century since its founding the lab itself has issued nearly 2000 technical bulletins, papers, booklets and other periodicals describing activities there.

The Madison lab relies on close interation. The success of a project in one division often is dependent to a great degree on the help or findings of another unit. Paper overlays would have been impossible without the advent of suitable glues, use of certain wood species would have been out of the question for paper making before development of improved pulping methods like the semi-chemical process — there are endless examples of why a laboratory is not made up of independent

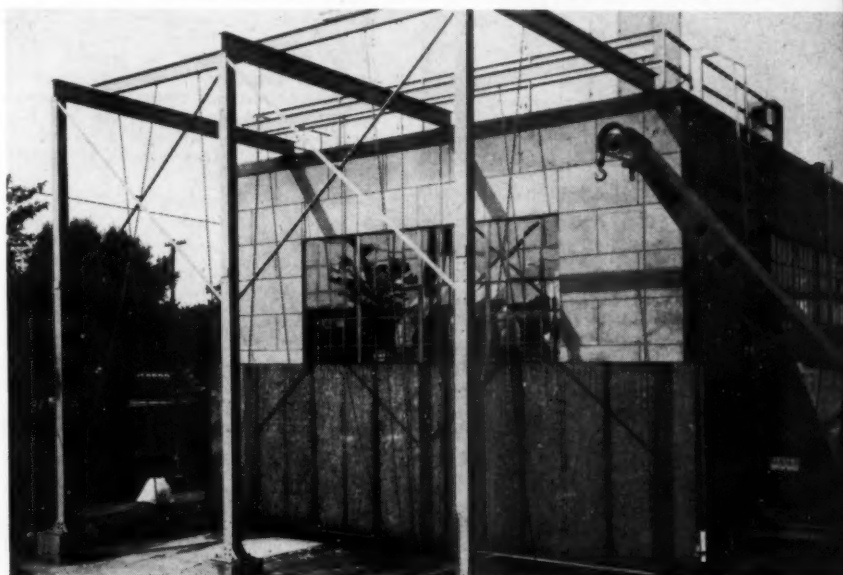
parts, but by members of a team.

One of the things most likely to impress a visitor to the lab — and there were more than 12,000 of them, including representatives from 40 foreign countries, during 1953 — is the diversity of activity.

The lab states as its purpose: "to aid in protecting and enhancing the value and utility of forest products; eliminate waste and reduce costs in logging, in manufacture, and in the use of wood products; increase the serviceability and satisfaction of forest products to the consumer; and develop new and useful products from wood." These objectives cover a lot of territory and at times involve jobs not ordinarily associated with wood products research.

Among these little-known roles played by the lab has been that of detective. This sleuthing has run the gamut from identifying the wood used in a ladder that was instrumental in convicting the kidnapper in a famous case to deciding whose willow tree was responsible for plugging up the neighborhood drainage pipes. The lab's wood identification experts also do a thriving business in naming wood species for collectors, or settling arguments among amateur experts, or satisfying the just plain curious. Only recently Dr. B. Francis Kukachka of the division identified a specimen sent in from Egypt as medieval cypress, and what looked to the layman like a matted bunch of fibers as a chunk of pre-glacial spruce someone

Testing a large plywood sheathed crate at the lab. Crashing crate against concrete bulkhead simulates bumping in rail transportation



had dug up in an old Montana mine.

The lab also deals in such off-beat activities as earthquakes. One of its current experiments in this connection is testing wood floors and wall panels to determine their resistance to 'quakes. Much of this testing is done on what lab workers call the "million-pound machine." A contraption designed to simulate as nearly as possible the jolt of an earth tremor, the machine literally wrenches a large panel from its conventional rectangular shape into that of a parallelogram. This gives the scientists a good idea of at what point a wood structure will become so weakened by the force of an earthquake that it will no longer support its load.

That wood does all right for itself is pointed up in the following excerpt from a paper, "Earthquake Damage in California in 1952," prepared by Edward W. Kuenzi, an engineer at the lab:

"Briefly, the observations of structures in the earthquake zone showed that masonry construction suffered most damage, reinforced concrete construction of years ago was extensively damaged, more recent reinforced concrete construction was only moderately damaged, but timber construction, old or new, suffered practically no damage."

The earthquake studies and many other projects at the lab are done on a cooperative basis, with the individual, firm, agency or state having the problem putting up a specific share of the cost of the project and the lab doing the actual research. In such cases the lab does not recommend or advise, it merely makes its findings available to the cooperator. In this context, new techniques or products developed at the lab are, in effect, patented in the name of the American people. This makes them public property and precludes the possibility of their being "cornered" by any single individual or concern.

Besides the myriad of researches carried on at Madison, the laboratory conducts a variety of field demonstrations, including among others "schools" for small sawmill operators and instruction in packaging techniques. And FPL's field men don't confuse the scientifically naive with technical jargon. They have found, for instance, that advising a small mill owner to readjust a certain cutting tool to "shirt pocket

height" gets better results than a lecture on the "energy requirements for inserted-point circular head-saws." The same simplified approach goes for other field teams.

It is not the intent of this brief review of some of the projects at the U. S. Forest Products Laboratory to imply that this is the only center where scientific investigations are going full tilt. Exploration of comparable importance also is being carried on by universities and colleges, by some states and by industry-sponsored centers like the Institute of Paper Chemistry at Appleton, Wisconsin, where, according to a recent article in *The Wall Street Journal*, researchers are developing "wall-paper that kills flies," and "paper grown in a test tube."

But the Madison lab is "the granddaddy of them all" and is still regarded as one of the finest institutions of its kind in the world. And when the visitor walks across the paper floor of the laboratory's lobby, glances up at the paper honeycomb acoustical ceilings in some of its rooms, or tours the paper house on the laboratory grounds, it is easier to understand why fiber products—and the other products of the forest—continue to play such an important role in our everyday lives.

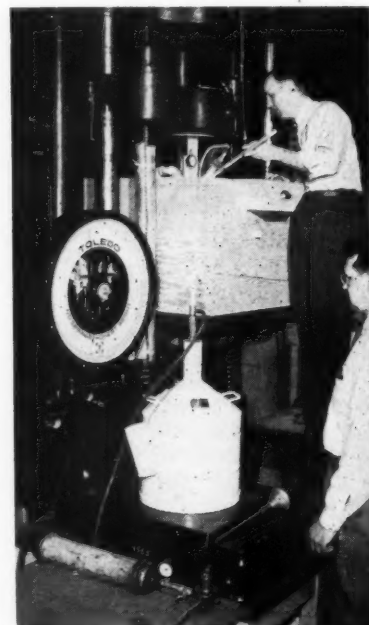
Theodore Roosevelt once defined forestry as "the preservation of forests by wise use." The Madison lab is helping a nation practice T. R.'s kind of forestry.



Liquid air was used to lower the temperature in a special compartment built on a Forest Products Laboratory testing machine so that wood could be loaded at 300 degrees below zero. The tests show that contrary to legend, most strength properties were increased at low temperatures. Some of the equipment used at the laboratory for low-temperature testing was designed by lab personnel from makeshift parts



Surprisingly little research has been conducted in the past on the action of wood cutting tools. The blurred pendulum here carries a single saw tooth which has just taken a cut from the top of the wood specimen. Energy involved is measured by pendulum travel as indicated on the drum at top right of the photograph



Divisions of the Forest Products Laboratory

THE operation of the Forest Products Laboratory is organized in eight technical divisions and two service divisions in addition to the office of the fiscal agent and the library, which is operated as a branch of the Department of Agriculture in Washington, D. C.

Timber Growth and Industrial Relations: Has broad responsibilities dealing, first, with the relations between growth conditions and wood quality, anatomical structure and properties, and secondly, with more efficient harvesting and utilization of timber. Among other things, this division is concerned with the development of methods for grading logs according to use potentialities, the dissemination of information on improvements in logging and timber handling equipment, and in research to improve the efficiency of small sawmills, and the machining of wood.

Timber Mechanics: Since strength is the critical characteristic of more than 65 percent of all sawed timber—22 billion board feet going into structures annually—timber mechanics and structural research is an important activity at the Forest Products Laboratory. The basic strength properties of 175 native species have been determined, but as the supplies of preferred species and old-growth timber became depleted the properties of secondary species and second-growth material must be more intensively explored to fit them properly into the construction picture. The data sought provide a basis for structural design, for selection of species for particular uses, and for finding serviceable substitutes for scarcer and higher-priced woods.

Materiel Containers: Research on shipping containers and packaging is designed to conserve wood and improve its utility by reducing the amount of material required, saving shipping weight and space, and producing stronger and safer containers of both wood and wood fiber. Since the container alone cannot protect against extreme changes in temperature and humidity during shipment and storage, work is under way to improve interior packing as well as blocking, bracing, and cushioning.

Timber Physics: Wood seasoning and moisture control are the subjects of research in this division. At-

tention is devoted to determining optimum yard conditions for air seasoning under modern conditions involving the use of mechanized handling equipment; work continues on species spot checking of new and improved kiln-drying schedules, on the control of moisture condensation in frame-house walls, and on non-destructive tests for wood by electronically induced vibrations.

Wood Preservation: The effectiveness of standard and promising preservatives in protecting wood from decay, insects, and other destructive organisms is determined in experimental treatments and in field tests of considerable size and long duration.

The research in fireproofing extends over a wide range of chemical treatments and types of fire-resistive construction.

The Laboratory has made and continues to make definite contributions to methods of obtaining more lasting and satisfactory service from paints and other coatings on wood.

With the development of new adhesives with greatly improved facility of use and durability in service the Laboratory is investigating the durability of many new types of glues—including those for joining wood to metal—so that they may be used economically to produce better joint work in wood of all types.

Forest Disease Research: To combat the enemies of wood this division studies the decay, stain, and mold organisms that attack wood—especially with regard to diagnosis of decay in wood, classification of fungi, and development of satisfactory short-time laboratory methods for determining the long-range effectiveness of wood preservatives.

Derived Products: Investigate chemistry, composition, and derived products of wood and wood waste. The chemical composition of wood, the arrangement of the constituent parts in the wood fibers, and the variations of such characteristics according to species are explored for the insight they can yield in all fields of wood research—in silvicultural control of wood and its properties, in its selection, seasoning, and handling, its impregnation with preservatives, its use in construction, and its conversion into pulp and chemically derived products of all types.

Pulp and Paper: With the aid of a completely equipped experimental-scale pulp and paper mill, this division seeks to improve existing pulping and papermaking processes and to develop new and more economical methods.

Service Divisions and Library: The Laboratory service divisions attempt to relieve technical divisions of as many routine duties as possible so that researchers may concentrate on constructive analysis of research results. The division of engineering and plant management operates the housekeeping and business aspects of Laboratory operation, including mail control, stenographic pool, carpenter shop, machine and electrical shops, and engineering and drafting services. A computing section is operated by the same division, where with the aid of calculating machines and IBM card machines data are compiled and analyzed according to researchers' needs and publications are checked for accuracy of tabulated material before processing.

The USDA branch library at the Forest Products Laboratory, although subordinate to the Washington Library, contains one of the most complete libraries on forest products in the world.

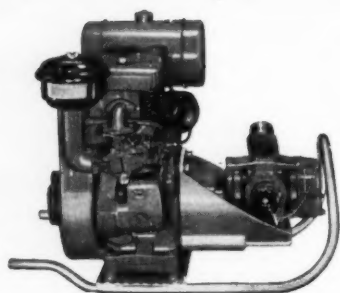
The Forest Products Laboratory's information and education division disseminates the results of Laboratory research and provides editorial and photographic services, as well as handling much general correspondence and taking responsibility for the preparation of exhibits and reception of both casual and consulting visitors.

Administrative Technical Personnel: Dr. J. Alfred Hall is the Director of the Forest Products Laboratory. His predecessors have been McGarvey Cline, 1910-1912; Howard F. Weiss, 1912-1917; Carlisle P. Winslow, 1917-1946; G. M. Hunt, 1946-1951.

Currently the following chiefs of technical divisions are in charge at the Laboratory: Timber Growth and Industrial Relations, H. L. Mitchell; Timber Mechanics, R. P. A. Johnson; Materiel Containers, Kenneth W. Kruger; Timber Physics, Ray C. Rietz; Wood Preservation, T. R. Truax; Derived Products, E. G. Locke; Pulp and Paper, G. H. Chidester; and Forest Disease Research, R. M. Lindgren.

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2500 Invited to USFS Banquet

FRIENDS of forestry all over the United States last month were signifying their intentions of attending the Golden Anniversary Banquet honoring 50 years of distinguished service by the U. S. Forest Service February 4, at the Statler Hotel in Washington, D. C. Co-sponsored by The American Forestry Association and the Society of American Foresters, the affair presents an opportunity to a grateful citizenry to show its appreciation for the invaluable work of the U. S. Foresters in husbanding the nation's renewable resources heritage for five decades. With national leaders in all phases of renewable resources work scheduled to attend, the dinner will also commemorate marked advances in all resources work in the nation.

As of last month, 2500 invitations had been mailed out by the two sponsoring associations, with the first going to the President of the United States. Key cabinet members, Chief Presidential Assistant Sherman Adams, who has been active in the work of both the AFA and the Society, members of Congress, national leaders in resources work, and people interested in good forestry everywhere are being invited to attend with Co-Chairmen Lowell Besley, of the AFA, and Henry Clepper, of the Society, stressing that any friend of forestry is welcome at the dinner. Reservations

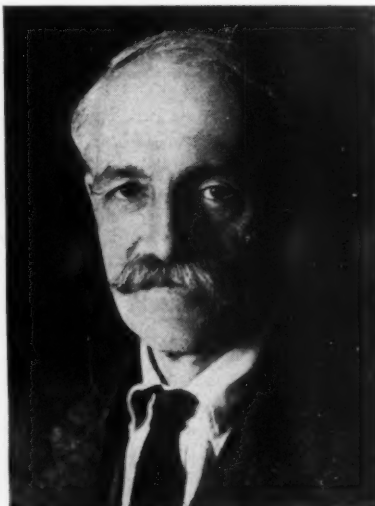
may be made through either of the two sponsoring organizations.

Subject to the wishes of the President in the event he finds he will be able to attend, the affair will open with a reception at 6:30 p.m. in the Congressional Room at which President Don P. Johnston, of the AFA, and E. L. Demmon, president of the Society, will be the hosts. In the receiving line will be the members of the President's party, Mrs. Gifford Pinchot, wife of the first Chief Forester; Dr. R. E. McArdle, present Chief of the Forest Service; and former chief foresters W. B. Greeley, Earl Clapp and Lyle F. Watts.

Dinner will be served at 7:30 p.m. Tentative plans for the program include a statement by the President or the Cabinet member he designates to represent him. Mr. Adams, the Assistant to the President, has been invited to give an informal talk on his early working relationships with the Forest Service and forestry in general.

Presidents Johnston and Demmon will act as co-toastmasters at the dinner and introduce a notable array of distinguished guests.

A followup feature of the Golden Anniversary banquet will be a special issue of AMERICAN FORESTS devoted entirely to the first 50 years of the Forest Service. Scheduled to appear in March, the issue will include coverage of the February 4 dinner.



Gifford Pinchot, first USFS chief



Richard E. McArdle, present chief

AFA Elects New Directors

THE American Forestry Association last month announced the election by its membership of five members to the Board of Directors and 21 Honorary Vice Presidents.

Elected to three-year terms on the Board of Directors were:

Mr. David V. Hagenbarth of Dillon, Montana, a woolgrower and cattleman, an influential leader of the livestock industry. He is particularly known as a spokesman for sound grazing practices.

Mrs. Katharine Jackson of Peterborough, New Hampshire, a member of the New Hampshire Senate and a leader of women's clubs activities, who is directing most of her talents at the present time to water conservation problems.

Mr. Harold B. Shepard of Boston, Massachusetts, a forest economist in the Research Division of the Federal Reserve Bank of Boston. He is an exponent of forest fire insurance, and has been expending much effort in trying to develop a workable schedule.

Mr. Philip W. Smith of New Hope, Pennsylvania, an agriculturist and dairy farmer, specializing in Guernsey cattle. He is interested in all aspects of the conservation of forests and other natural resources.

Re-elected to a second term on the Board of Directors was Judge Robert W. Sawyer of Bend, Oregon. He has been most active in reclamation work for many years, and was a featured speaker at the 1953 Conference on Resources for the Future.

Newly elected Honorary Vice Presidents are: Herman Baggenstoss, Editor, *Grundy County Herald*, Tracy City, Tennessee; G. Harris Collingwood, Specialist in Forestry Legislative Reference Service, Library of Congress, Washington, D. C.; Truman Collins, President, Collins Pine Company, Portland, Oregon; Robert J. Filberg, President, Canadian Western Lumber Company, Vancouver, B. C.; Emanuel Fritz, Consulting Forester, University of California, Berkeley, California; G. B. MacDonald, Dean Emeritus, School of Forestry, Iowa State College, Ames, Iowa; Lawrance W. Rathbun, Forester, Society for the Protection of New Hampshire Forests, Concord, New Hampshire; Paul D. Sanders, Editor, *The Southern Planter*, Richmond, Virginia; Mrs. Marion T. Weatherford, Conservation Chairman, General Federation of Womens' Clubs, Arlington, Oregon; and Charles G. Woodbury, Vice President, National Parks Association, Washington, D. C.

Honorary Vice Presidents re-elected are as follows: Horace M. Albright, President, United States Potash Company, New York, New York; Ivan C. Crawford, Director, Colorado Water Conservation Board, Boulder, Colorado; Mrs. Malcolm J. Edgerton, The Garden Club of America, Stamford, Connecticut; I. F. Eldredge, Consulting Forester, New Orleans, Louisiana; Walter C. Gumbel, Soil Conservationist, Monongahela Power Company, Fairmont, West Virginia; Reuben G. Gustavson, President, Resources for the Future, Washington, D. C.; G. W. E. Nicholson, Executive Vice President, Union Bag and Paper Corporation, New York, New York; Reuben B. Robertson, Jr., President, Champion Paper and Fibre Company, Hamilton, Ohio; M. N. Taylor, Executive Director, Trees for Tomorrow, Merrill, Wisconsin; Lyle F. Watts, Former Chief, U. S. Forest Service, Portland, Oregon; and Peter F. Watzek, President, The Crossett Company, Crossett, Arkansas.

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Good Turn for Conservation

(From page 13)

Federation; Seth Gordon, California Fish and Game Department; R. E. McArdle, Chief, U. S. Forest Service—and a former Eagle Scout; John L. Farley, Fish and Wildlife Service; Karl T. Frederick and Don P. Johnston, of The American Forestry Association; Arthur Wakeman, Coosa River Newsprint Company; Randolph Pack, of the Pack Forestry Foundation; and G. W. E. Nicholson, of the Union Bag and Paper Company.

Even so, this high powered committee and its army of volunteer leaders has needed and received yeoman support from countless other public and private agencies in the United States in the effort directed to two-and-a-half million Boy Scouts.

"The response," Ted Pettit says, "has been tremendous."

Almost every region and locality across the country has found an industry or a business, the state conservation department and such agencies as the Soil Conservation Service or the Forest Service—or all of them—providing active aid in getting the program off to a good start. In some cases various organizations have contributed as many as three experts in the effort to teach more and more the fundamentals of wise use management.

Nor are the Scouts alone affected. When an organization like the Boy Scouts, backed by the President of the United States, winds up to let fly on a nation-wide conservation program a lot of people feel the impact. From the standpoint of the Scouts themselves, Dr. Arthur A. Schuck commented that "this has been the most popular national good turn ever undertaken by the Scout organization, with more boys participating." Then too, the public itself has been given a healthy conservation jolt as the result of this program. Communities across the land last year shared, in various ways, in Scout conservation projects. Finally, millions of television viewers have been bombarded by 11 Boy Scout-produced conservation films that have been projected by 296 stations a total of 17,706 times.

Readers will readily recall these terse, excellently-prepared films starting with one that featured Sec-

retary of Agriculture Ezra Taft Benson and Secretary of Interior Douglas McKay and other Scouts last March and which have since included presentations on outdoor manners, fire prevention, wildlife, hunter safety, soil and man, forests and water and fish conservation. As a result of all this activity, the conservation merit badge business within the Scout organization has picked up tremendously, with wildlife and forestry running neck and neck for first honors and soil projects close behind. Another indication that conservation has greatly increased in popularity with the boys is the fact that applications for the coveted Hornaday Award have increased from an average of 25 a week two years ago to between 150 and 200 a week in 1954.

Conservation, of course, is not a new activity in Scout work. Scout history shows that the first Conservation Good Turn drive was launched back in the days of "Teddy" Roosevelt, Gifford Pinchot and John M. Phillips. When a shortage of walnut wood for airplane propellers and gun stocks developed in World War I the Scouts, encouraged by the Pennsylvania Game Commission, launched a program to plant black walnut trees. And, of course, the Scout movement has always been a strong advocate of good woodland manners and proper conservation practices by all boys learning woodcraft.

Just the same, nothing quite like this conservation good turn program started last year has ever been experienced by the Scout movement before. And one of the prime reasons for its success is personable, modest Ted Pettit—a Scout leader who has a certain genius at persuading people that they ought to work for him and who then coordinates their efforts into an efficient pattern of accomplishment.

"Ted Pettit has an infectious enthusiasm that is difficult to resist," one business man told us recently. "Sure, he's got his feet on the ground and is a real 'wise use' conservationist but in addition to that he has a sort of knack in making you remember you were a boy once yourself."

There's much truth in that state-

ment, for Ted Pettit knows that boys don't change much from one generation to another. And he knows that such things as hunting, fishing and trapping represent the most direct route to the average boy in stimulating his interest in such things as forestry, soil and water conservation.

"Boys like to hunt and fish," Mr. Pettit said recently. "They also like to trap. Realizing that, why not take advantage of this knowledge and use these things as props in stimulating their interest in the resources that make these pursuits possible? Oh, I know there are some who object to trapping; others who object to hunting. But this is a country where we've always prided ourselves on our ability to shoot straight. And to my mind the sportsmen of this country, abiding by the rules of good woods conduct, represent one of the most potent and constructive forces in sound conservation. And boys who quickly perceive the necessity for the right kind of fish and game management practices will respond just as quickly to the importance of careful cutting methods in the woods, or water conservation, or protecting our forests from fire. And since boys by nature are inclined to be romantic creatures, the approach to these matters shouldn't be too prosaic. It requires imagination."

Which brings us to one of the biggest problems that started to develop last year and is still developing in regard to the conservation good turn program. That is the difficulty of enlisting enough competent people—idea type people—who can project conservation subjects to the growing list of Boy Scouts in a way that will fire their interest and sustain it. Some of the people who have been drafted already from the resources field have been truly fine, Mr. Pettit said. But more are needed in towns and cities across the United States. And people with this type of experience—whether they be industrial foresters or conservation-minded sportsmen—are urged to enlist in this program that is getting a new generation of boys off to a solid conservation start and one which is jacking up the interest of their elders at the same time.

How does this good turn program that has been largely originated and developed by Mr. Pettit operate? In organizing a program of this type in a given community, a "kick-off" event is first scheduled at which Cub Scout packs, Boy Scout troops and Explorer units hold meetings to which friends and members of their sponsoring body are invited. With the assistance of local conservation technicians, those in attendance are alerted to the conservation needs of the community and methods by which anyone may help solve the problems. The Scout conservation program for the year will then be announced and help requested in carrying it out. At the conclusion, those in attendance will be asked to subscribe to the Outdoor Code for Americans.

This code represents the key for all ensuing activity programs. Special programs are sometimes arranged in schools, churches, service, civic and sportsman's clubs and other groups where it is proclaimed. Each Scout and leader who agrees to take part in the good turn project and to live up to the code receives a pocket card on which the code is printed. In conjunction with the Cooperative Forest Fire Prevention Committee, more than a million posters were provided last year. These were distributed by 90,000 Scout units across the nation. This poster asked the public to "Join With the Boy Scouts to Prevent Forest Fires and Conserve our Forest, Soil, Water, Grass and Wildlife Resources."

The area of action, Mr. Pettit stresses, is the most important of the whole Conservation Good Turn. Much of the success of the program is based upon the degree to which boys carry out conservation projects on the land and thus learn the importance of the wise use of natural resources. These projects must be developed locally, to meet the local needs and make use of local techniques, to have real meaning for boys. Assistance of local conservation technicians is sought for the purpose of developing a list of local projects suited to the community as well as to boy interest and ability.

Nationally, there are some one third of a million acres in Scout camp properties. Some of this land has long since been well managed, but a large part leaves much to be desired. One big objective of the good turn program is to get every acre of Scout-owned land under sound management, starting with a

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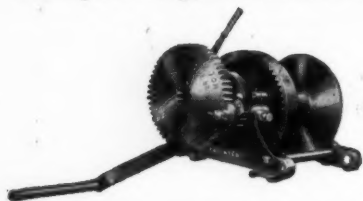
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comprehensive land use plan. It is the hope that Scout camps (more than 800) may become outstanding examples of good conservation practices and thus become laboratories where boys and leaders may learn by doing.

Some of the measures required, both on the Scout camps and local projects, are beyond the reach of boys, and require expert workmen. But there are still plenty of things they can do as is shown by the climax event in last year's good turn programs—namely, the public demonstrations that were held by various groups on a council, district or unit basis. Purpose of these demonstrations was to point up to the general public some of the local conservation problems and what the Scout program did to help solve them. These projects varied, of course, depending on what needed to be done. In forestry, the Scouts planted tree seedlings as part of managed forestry plans on campsites, public lands, farms and on sites for future supplies for pulp and timber; pruned woodlands; set up forest fire instruction programs; participated in tree insect and disease control projects; and set up demonstrations on rangeland conservation.

In areas where soil conservation measures were of paramount importance, the Scouts plugged gullies, planted young seedlings on bare slopes, sodded runaway terraces and helped to check siltation in streams. And wildlife projects found the

Scouts planting food shrubs and cover, working on wood duck and squirrel boxes, building small check dams and providing more cover for hot streams.

But what of the Scouts in big metropolitan areas, including those who don't always reach one of the 800 Scout camps, you ask? First of all, 50 percent of all these boys actually do get to summer Scout camps and are exposed to camp conservation programs, Mr. Pettit revealed. Many municipal units have also taken up the study of water and have traveled to their own city watersheds to study the problem first hand. Visits to lumber yards and other wood-using industries have also proven profitable in showing the boys where there wood comes from and how it is converted to hundreds of products.

The aid the Scout program has received in opening up and developing the good turn program has been most gratifying to the Scout organization but in many cases Scout groups will need help in finding places to work—public land, commercial timber land, power and railroad rights-of-way, farm woodlots, and similar areas where they may carry out on-the-land projects in forestry and other resources activities.

In brief, if you have a conservation job to do on your land that requires willing hands working under competent supervision, why not tell the Boy Scouts about it?

Men, Trees and Inventions

(From page 28)

anything carried in the wheelbarrow.

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Then there is the special "Cooking Apparatus" of William Fowler of Canterbury, England which no camper should be without.

Let Fowler speak for himself:

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These few are only a small sampling of the huge treasures of the United States Patent Office at Washington, D. C. It is loaded down with millions of contributions for better life in the woods and field. And you ain't seen nothing yet!



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Timber Owners Seen Anxious to Insure Against Fire

TIMBER owners are as anxious to insure their holdings against fire damage as any other types of property owners, H. B. Shepard, forest economist for the Federal Reserve Bank of Boston and a director of AFA, told the Western Forestry and Conservation Association last month in San Francisco.

What then is the lag in the forest fire insurance effort that last year became one of the prime goals in AFA's new Program for American Forestry? The answer says Mr. Shepard, based on years of observation, is a lack of conviction on the part of the established fire insurance firms


that a real demand exists for this type of coverage.

The response to such offerings as the companies have made would seem to bear out this belief, Mr. Shepard admits but there are reasons, he adds, for questioning the validity of the evidence. For example, hardly a week goes by that he does not receive at least one inquiry into the possibility that an owner might be able to place fire insurance on his timber property, Mr. Shepard said. Forestry associations and both public and private forestry-type agencies receive similar inquiries all the time.

"My observations over an extended period of years have led me to the firm belief that timber owners are as anxious to insure their holdings against fire damage as are other types of property owners," Mr. Shepard said. "The difference between this desire and an effective demand is related to the price factor. When premium rates are in line with rates on other types of property and, particularly, when they are in line with the earning capacities of forest properties, forest fire insurance will be big business in the United States.

"I have tried to find figures that would give a clue to the relationship between fire insurance premiums and income in the general run of business. So far I have only been able to get a few bits of evidence that indicate that the cost of fire insurance (property damage only) is, in some cases, somewhere in the neighborhood of one to two per cent of operating profit among the better manufacturing risks. Annual costs of sprinkler systems and the sprinkler leakage premium are, of course, parts of the whole cost to a manufacturing operation. To be comparable, and I admit I am doing some guessing, a forestry operation could be asked to pay perhaps up to ten per cent of operating profit (net value of the annual growth before income taxes), without damage to the effective demand. Such a premium would amount to around 50 cents per hundred dollars of insurance in a typically productive forest if the policy includes a three-quarter loss clause.

"I do not mean that all forest property owners should be charged 50 cents for their fire insurance but

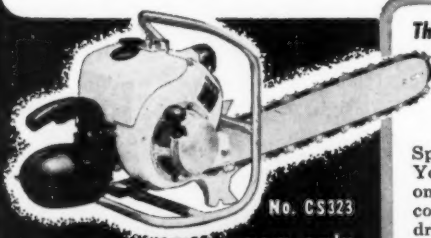


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I believe this figure is somewhere near the dividing line between a sale and no sale. My point is that I believe we will see an effective demand for forest fire insurance begin to build up when premium rates come within range of the figures I have quoted.

"Fire insurance companies will undoubtedly continue to insist that premium collection be sufficient to cover loss payments and the cost of doing business, including some minimum of profit. Granting that such an expectation should be agreeable to all parties concerned, what are the prospects of a sufficient volume of business, adequately spread, on such a basis? We can estimate conservatively that the timberlands in the northern and western states have an aggregate insurable value of six billion dollars practically all in private ownership. Insuring three-quarters of this at an average premium rate of 50 cents would produce \$22.5

SEVEN HUNDRED delegates to last month's convention of the Western Forestry and Conservation Association in San Francisco unanimously adopted in principle The Program for American Forestry drafted and approved last year by The American Forestry Association. AFA representatives at the western convention included H. B. Shepard, a director, and forest economist for the Federal Reserve Bank of Boston, and Lowell Besley, executive director-forester of AFA.

million of premium income. During the past ten years the average annual loss on the more than 200 million acres of private forest land in these states has been only a little more than four million dollars. The 20-year average loss has been only slightly greater. Three-quarters of the loss is three million dollars. It would probably not be possible to sell fire insurance on all this property, at least at the outset, but there is a wide margin for variance between the probable loss experience on an insured portion and the past experience of the whole provided due care is exercised in the acceptance of liability.

"There will be other ingredients essential to planning for successful operation of a widespread forest fire insurance project, more interesting however than difficult. If this program you are launching here takes hold, and I sincerely hope it will, a start will be made in the gaining of practical experience. This will be of great value when the time comes to spread out. That time should be soon."

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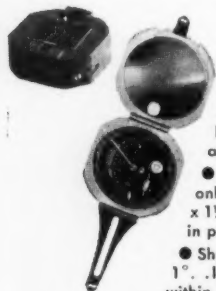
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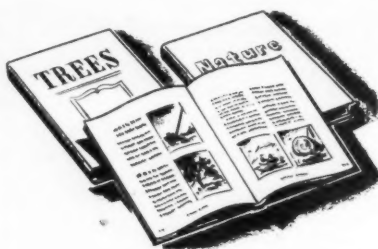
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Reading About CONSERVATION

By ARTHUR B. MEYER

A million and a quarter board feet of logs thrown like toothpicks about a spar tree—and men looking like insects on the pile... Armies of coffee cups and plates lined up and awaiting attack by hungry loggers... That was logging in the Pacific Northwest as recorded by the camera of Darius Kinsey, whose picture-taking started back before the turn of the century when forests were virgin, loggers had considerable hair on their chests, and cameras were almost as big as modern jeeps. *This was Logging* (Text by Ralph W. Andrews, Superior Publishing Co., 157 pp., 1954, \$8.50) will catch your interest.

For 40 years photographer Kinsey snapped pictures of the loggers and their environment. He had an eye for the spectacular. He was also a careful craftsman, and his pictures as reproduced in this book have a remarkable clarity of detail. Kinsey's last pictures in the woods were taken in 1940. He died in 1945, leaving behind a well preserved collection of 8000 photos. From these the selection in this book was taken.

The photographs are accompanied by captions and by a text that can be divided into two parts. One is an interesting story of photographer Kinsey's life and work. The other is a collection of individual short pieces about various aspects of the lumber industry in the Northwest, stressing its evolution.

A fascinating book, and a real contribution to the history of America's forest resources.

Elmer Peterson in *Big Dam Foolishness* (Devin-Adair Co., 224 pp., \$3.50, 1954.) discusses flood control and water storage. He argues against building big dams on the "main stem" of rivers and in favor of a combination of small upstream dams and land treatment aimed at encouraging the water to soak into the land where it falls. This inevitably involves the flood control program of the Army Corps of Engineers and the flood prevention program of the

Soil Conservation Service, U. S. Department of Agriculture.

Peterson, a well-known newspaperman, has a strong main theme and makes some telling points in his arguments.

Here are some of Peterson's main lines of reasoning:

1) The wilderness is never defeated. The rules of nature cannot be successfully broken for long. Flood prevention works with nature; big dams against it.

2) The earth in its natural state has a tremendous capacity to soak up and hold water. This capacity can be maintained by intelligent land-use practices.

The fact that we are reducing this water-holding capacity is apparent. Natural springs that have gone dry demonstrate it. Dropping ground water levels all over the country substantiate it.

The author presents a number of examples where land-use practices and small reservoirs have recreated the land's water holding capacity. He cites examples of managed watersheds where scientific records have proved this ability to hold water, even during abnormal rains, without erosion or flooding.

Peterson feels that these successful demonstrations have not been sufficiently publicized in substantiating the claims of those who fight for the acceptance of such methods of flood control and water storage. He feels that big-dam interests ignore such facts and divert discussion on the problem away from the basic issues. Soil Conservation Service men, he says, are restrained from higher up in telling the public how successful their land-use, small reservoir program actually is in controlling floods.

3) The most serious problem of all with big dams is siltation. This involves not only the rapid filling up of the reservoir itself, but the movement back up the stream of the silt drop line. (The point where the water is slowed down sufficiently to cause it to drop out silt.) This results in a complete change in the

character of the stream and its cluttering with gravel, sand, and silt, which further encourages flooding.

His points about siltation are most vividly apparent in the prairie region—where a large proportion of the Army Engineers' dams are proposed.

4) Evaporation from a surface reservoir is a major loss. This is not experienced when the water is stored underground, after nature's methods.

5) In order to sell big dams to the public, their proponents have adopted "multiple-purpose" values which invalidate part or most of the dams' flood control value. Holding a minimum pool for power generation or recreation is such a procedure.

6) Big dam impoundments take large acreages of the country's richest farming land.

It seems unfortunate that Peterson didn't document some of his cited examples and his specific arguments more definitely. (Although there are a number of good examples identified.) He is dealing with a question that will never be settled until there is a mass of scientific data to substantiate contentions and opinions. However, he makes the point that "there seems to be only one force that can circumvent the

organized big-dam lobbies. That is the power of public opinion. The writer is convinced that public opinion, where there has been fairly adequate information, is overwhelmingly on the side of the watershed school of thought." Obviously, Peterson's book is directed at influencing that opinion. He has written it by taking the basic arguments in favor of upstream control and against main stem big dams and has presented them in a forceful manner.

The *Manual of Southern Forestry* by Howard E. Weaver and David A. Anderson (Interstate Printers and Publishers, 368 pp., 1954, \$3.75.) should do much for forestry in the South. It was written "with special adaptations for students of vocational agriculture," but not solely for them. It will serve equally well as a reference and guide for landowners who wish to handle their timber property to the best advantage.

Subject matter and scope are indicated by the titles of the book's thirteen chapters. These are headed: Introduction to Forestry; Tree Study; Forest Measurements; The Forest Environment; Intermediate Cuttings, Pruning, and Harvest Cuttings; Artificial Reforestation; Forest Management and Economics;

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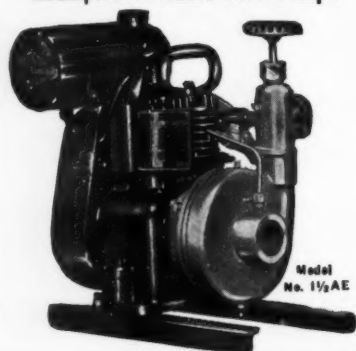
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Forest Range Management in the South; Wood Identification and Uses; Harvesting, Manufacturing and Marketing Forest Products; Wood Preservation; Protection From Fire; and Protection From Other Forest Enemies.

By confining their coverage to southern forestry, the authors have been able to tie their subject matter down so that it is of practical application for the southern landowner. By the same token, students can recognize matters close to home. The book does not, however, skip over the fundamentals that are the same anywhere. Creditable coverage is given to basic matters in the process of showing regional application of them. This results in a combination textbook—manual that is not oversimplified, and still is not excessively technical. A hard balance to reach. As a result some may think the book too technical, while others may think it doesn't go deeply enough into the basic sciences that are used in forestry. If you keep in mind, however, that the book is aimed at the serious agricultural student, or landowner, you will probably agree that it offers real aid to the groups best suited to apply it.

The chapter on forest range management is very worthwhile. It

recognizes the conflict between grazing use and timber production. At the same time, while not pretending to give all the answers, it presents situations where these uses can be properly coordinated.

The subjects of forest fires and of prescribed burning as a tool of scientific management also receive judicial attention.

The business side of harvesting and selling forest products is dealt with from the practical standpoint of the landowner.

Appendix, glossary, and bibliography present much useful information.

The authors are with the Texas Forest Service. Weaver, a Ph.D., is an associate forestry educator in the Service. Anderson heads its department of research and education.

Principles of Forest Fire Management (Division of Forestry, California Department of Natural Resources, 200 pp., 1954, \$0.50.) was prepared for in-service training of California state-employed forest and grassland fire fighters. As indicated by the title, however, it deals with principles. Its handling of those principles makes it a valuable reference for any organization, public or private, that is concerned with fire protection.

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What About Richard Neuberger?

(From page 23)

ting, recreation, watershed protection for drinking supplies and sources of irrigation, grazing, wildlife management and so on. Today, we see this concept threatened."

He named three specific bills or actions affecting the Forest Service in the past year, and made it plain he will oppose recurrences.

First, he will oppose any revival of the Hope-Aiken bill to "expand" rights of stockmen. "This bill would change the present permissive basis on which stock owners may graze, and weaken the district ranger's supervision," he said. "It would raise grazing permits to a vested right, putting the interests of 18,000 stockmen above those of 33,000,000 recreationists."

Second, he told his objections to the Ellsworth-Cordon timber exchange bill, which would reimburse certain owners in timberlands elsewhere for timberlands taken for such uses as reservoirs behind dams. This bill, he said, would make timber

superior to farms and businesses, even churches and schools, which are subject to condemnation in the public interest on a dollar basis.

It also would benefit only the bigger timber operations, as few small operators meet the bill's sustained yield requirement. Furthermore, he said, the trading timber owner could choose federal land without veto by the Forest Service, regardless of other values.

In his campaign Neuberger quoted Dr. Ira Gabrielson as branding the bill "one of the crudest attempted land grabs in recent years." Numerous outdoor groups fought the bill, he added.

And third, the new senator will work for statutory separation of surface resources from minerals when mining claims are granted. Referring to the Al Serena Mines case in Oregon, he said that, even after patent is granted, the miner should not be allowed to harvest the timber, except for what he needs to develop his mine.

In the Al Serena case of the past year, he explained, the Forest Service recommended to the land office that eight of 23 claims ought be granted, but that 15 not be allowed because of lack of worthwhile minerals. The land office in Oregon ruled on that basis, and was then upheld by the bureau's top officials in Washington.

But the company, whose owners reside in Alabama, appealed directly to Secretary McKay. He sent out two inspectors from another agency, the Bureau of Mines, and the result was an overruling of the land office by allowing the claims.

At this point, Neuberger raked Secretary McKay: "His is the worst Interior administration in modern times. McKay is not corrupt, but his policies are more dedicated to private special interests, as opposed to the public interest, than any Interior administration since the days of Ballinger." (Richard A. Ballinger, Secretary of Interior for President Taft 1909 to 1911. Charged with improper handling of Alaska coal lands but later was exonerated.)

Asked for his views on proposals emanating from the Hoover Commission to merge the Forest Service

with the Bureau of Land Management, or at least the latter's timber functions, the senator said he was not familiar enough with them to comment.

"But," he added, "I'm not sympathetic right now to the idea of taking the Forest Service out of Agriculture after seeing how Interior is being run by our ex-governor."

These are some of the aims regarding federal forest lands which he stated he will take to Washington:

1) Access roads program financed by the government and not through sale of big timber blocks. Uncle Sam should get his money back as the timber is cut. Such a bill as that of fellow-Oregonian, Senator Wayne Morse, to authorize spending of \$25,000,000 a year for five years appears feasible to him.

2) Greater emphasis on sale of small blocks of timber by federal agencies, as a means of preventing monopoly from taking over the lumber business. A change, he said, is needed particularly in the Forest Service.

3) "Careful safeguarding" of national forests and Oregon's O & C

grant lands against any partnership which would bestow private rights upon favored bidders. Neuberger opposed cooperative sustained yield agreements which are monopolistic in nature, and backed equal competition in sale of federal timber.

4) A special program of production loans for small timber operators through the Farm Credit Administration. This should help to prevent lumber monopoly.

5) A price reporting system for forest products, and a central exchange to handle marketing of logs. In Oregon a limited price reporting service is maintained by the forestry school at Oregon State College, but the system should be more extensive.

"Forest roads," declared the senator, "should provide full access to all who have legitimate reasons for being there. Private owners of land providing portal to public lands should not retain control over the roads."

"Reciprocity features of the present O & C right-of-way regulations must be retained. If we don't insist on this, we may find control of timber operations in Oregon, for example, getting down to a half-dozen companies. The right of eminent

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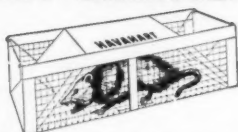


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domain may set a precedent for a solution."

Oil-for-education was another key plank in Neuberger's platform, furthered by his wife, Maurine, a former school teacher who has consistently drawn more votes for the state legislature than he has.

"If it's legally possible to recover the offshore oil lands for federal control, it should be done," he declared. "If this is done, then the oil-for-education formula should be applied. If it cannot, the government definitely should hold the continental shelf resource for the schools. This may in future years help to relieve the terrific burden of school support now borne by our communities.

"California already has divided up \$65,100,000 in offshore oil royalties and lease money, which I think should have gone to all 48 states. The state has no more right to that oil than Oregon, say, has to Crater Lake national park. It endangers the whole concept of federal operation of national forests and parks."

He has only limited faith in states' rights to publicly-owned resources and their ability to withstand the forces seeking special privilege.

He has criticized the record of his own state in its handling of 4,300,000 acres received at time of statehood for school purposes. Of this only 770,000 acres are left, and Oregon has but \$10,000,000 in its irreducible school fund, he said. The state averaged but \$2.16 an acre, while fortunes were made looting the children's timber.

He has cited a state timber land sale as late as 1948, which was handled without advertising and brought in less than the timber alone was worth.

This position would tend to align Neuberger against an Oregon move-

ment to take the timber-rich O & C grant lands—some 2,500,000 acres revested from a defaulting railroad nearly 40 years ago—out of the Bureau of Land Management and turn it over to the state. This has been long sought chiefly by a congressman of four decades ago, A. W. Lafferty, but has gained little support from either party.

Neuberger is strong for recreational development. Facilities in both the national parks and forests are being allowed to deteriorate and this must be reversed, he declared.

A six-footer weighing 185 pounds, the Portland solon has tramped and ridden many a wilderness trail to gather material for his writings. Most of his hundreds of articles published over the past 20 years have dealt with the outdoors and resources of the Pacific Northwest, Alaska and Canada. And his half-dozen books have been about the great West.

On current capital battles, he spurned the plan to construct Echo Park and Split Mountain dams on the Colorado river on grounds they would inundate Dinosaur National Monument.

"We don't have too many of nature's museums," he noted. The new senator rated present parks as generally satisfactory in size, but favored addition of certain limited areas, if proven sufficiently popular, either at federal or state level.

The Columbia Gorge in his native state is an example, he said. He lauded efforts being made by conservationists in the Portland-Hood river area to acquire now-private lands in the scenic gorge to preserve them from being logged.

"It would be absolute folly to allow the Columbia Gorge to be logged," he asserted. "Value of the logs is diminutive compared to the tourist dollars of Oregon's probably best known scenic attraction. Millions of people should continue seeing the dramatic change as they pass through the gorge from semi-arid uplands to Rain Forest."

Of the Olympic national park, about which Neuberger wrote several articles when it was formed, he said he has an open mind on the boundaries issue, though he is inclined to believe lines were well drawn after lengthy hearings. Lumbermen charge the park is needlessly large and locks up a great stand of mature timber unseen by tourists.

In his opinion, recreational functions of the national forests, par-

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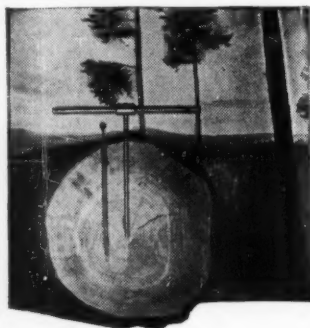
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ticularly in his own region, are not getting just treatment. Within practical financial bounds, he declared, the camp grounds and trails built by CCC crews in the 1930s should not be allowed to deteriorate further, and new facilities should be added.

The Forest Service itself has long sought more money for its recreational program, but has had limited luck even though it is now more than paying its own way, he pointed out.

Neuberger added comments on two other agencies. The Fish and Wildlife Service got the short end of the deal when the Interior department diverted duck stamp money to general operations. This year, he said, Interior violated its pact with the hunters by taking \$662,000 from a fund which always has been used for wild fowl refuges. And only a year ago the duck stamps were doubled in price to \$2.

The Bureau of Indian Affairs is terminating administration for some Indian tribes under questionable circumstances, Neuberger asserted.

He advocated that where tribal owners are adjudged ready to handle their own affairs, the government itself purchase at reasonable value such lands as will enhance the public's holdings, such as those next to the Fremont and Deschutes national forests in Oregon.

Lastly, the new senator paid tribute to the career men in agencies managing the public resources. He rebuked Secretary McKay for firing Dr. Albert M. Day, a career biologist, and replacing him as head of the Fish and Wildlife Service with "a public relations man from a paper company."

Legislators must rely on career experts for their technical opinions. A key example, in his view, is the allowable cut in the national forests. He favored new cruises as fast as they can be run, because improving methods of utilization are gradually increasing allowable cut. But in general the cutting levels should be left to the men trained in technical forestry.

"As a legislator, however, I must oppose extravagance in operation of our agencies," he added. "Policy is for elected representatives to decide."

And Neuberger intends to have his say on policy. He has asked that when the Democrats organize the Senate in January he be given a place on the Agriculture and Forestry committee.

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(From page 12)

heavy transports averaged 1880 miles daily.

Weather instruments had to be serviced, 200 test plots sprayed with varying combinations and concentrations of fire retardant chemicals and fuel desiccants prior to test burning. Special complex instruments had to be installed and dismantled for each of the 11 large test fires set off by UCLA engineers for the purpose of measuring heat transfer. Light aluminum pipe was laid—three men can lay 264 lengths or a mile in an hour over hilly terrain—to supply water to fire tankers. Every test fire had to be carefully watched, controlled and mopped up by trained fire crews and equipment. Complete photographic records for analysis purposes were made of all tests in color and black-and-white, using time lapse and 16 MM movie cameras and still cameras. All procedures and events were documented on over 5000 feet of color movie film. Men were required for laying electric firing patterns for simultaneous ignition and fire build-up tests and for hand grenade firing of similar tests. Progress and summary reports were written and issued.

Many different FIRESTOP tests were conducted each day. Technical planning and supervision for equipment development and the use of aircraft—both fixed wing and helicopter—was carried on by Region 5 USFS and CDF experts. Each kept careful records as did all project leaders to be correlated later with daily weather measurements for both microclimate and upper air—the background for all fire behavior. Weather Bureau men from both San Francisco and Los Angeles watched with interest and supplied daily fire weather forecasts from their offices.

On July 14, a group of invited spectators and the press watched a full-scale test using a Hiller 12-B three-place helicopter. Igniters were dropped from the helicopter along a prepared backfire line in order to fire out a large grass area. After firing, the helicopter returned to dramatically demonstrate its value as a fanning device by hovering over the same fired areas at low speed and low altitudes. Rate of spread nearly doubled after fanning but it

was also noted that no ground effect was apparent as soon as the helicopter reached and exceeded a forward speed of 20 miles per hour.

And on August 26, 600 guests were present during tests, including 300 members of the Pacific Inter-mountain Association of Fire Chiefs from their convention in Long Beach, California. They saw a Bell-47 three-place helicopter and the Hiller 12-B—loaned by their manufacturers—successfully demonstrate air to ground communication, firing, fanning, divebombing on spot fires with five-gallon water bombs, transporting and dropping men and carrying both live-reel and accordion-laid cotton jacket hose from stationary fire tankers up a steep 350-foot hill in a few minutes. They saw hot grass fires held along their flanks by chemically pretreated strips but they observed also that the chemical failed to stop a fire head burning uphill although it served well as a backfire line.

Again on October 1, visitors witnessed some of the final FIRESTOP tests—this time in heavy fuel. Once more chemicals proved they have a place in fire control if used correctly, although they are expensive. Time was the principal commodity gained by both the use of chemicals and the use of aircraft. A big nine-place Sikorsky S-55 helicopter from El Toro Marine Air Fleet spun out 1000 feet of cotton jacket hose carried in the ship across a steep canyon in less time than it took to charge the line afterward. It dropped 100 gallons of water from a specially rigged canvas tank on a large spot fire with accuracy and success—picked up a 100-gallon "helitank" and portable pump from a truck flatbed and delivered them to a man on a ridgetop fire a mile away. The S-55 also proved that it is equally as maneuverable as the smaller helicopters through an exhibition of flying skill.

A spectacular climax to both the project and the day came when a big Torpedo Bomber equipped by a local air corporation to drop 600 gallons of water from its bomb bay, extinguished the bulk of a brush fire by drenching it with a cloud of water 50 feet wide and 250 feet long.

These are some of the things FIRESTOP explored but the

surface of possibility was hardly scratched in the time allowed. In addition, technicians found that fuel moistures of green vegetation could be dropped to less than 10 per cent in six to eight hours by spraying with chemical desiccants either by fixed wing aircraft or ground spray rigs—a valuable tool in backfiring.

But perhaps FIRESTOP's greatest single contribution in the long run will come from the extended wind survey. Prevailing winds and average speeds for all times of day were continuously recorded and computed from June into late October. Wind flow patterns will be mapped from records taken at key points in "Wildcat" canyon—a test drainage in the area. Much was learned about ways to measure mountain canyon effects on wind. At two places long cables could be raised and lowered or moved laterally across the steep parts of the canyon. Anemometers wired to recorders were strung along their lengths. Or perhaps the fuel study, also carried on for the duration of the project, will be most helpful by providing fire control men with more detailed fuel classifications based on size, height, kind, moisture content, dry weight and arrangement—the important fuel elements on which to rate and predict fire behavior.

In any event a start has been made and proof given of the value of "full recognition of protection responsibility by . . . cooperating federal state and private groups."

FIRESTOP data will be analysed and progress reports written and distributed as a small beginning but much "more needs to be learned of fire and weather . . . prevention . . . methods, techniques and equipment . . . research is required to perfect a defense against fire from incendiary attack . . . to control large and catastrophic forest fires," to quote in part from A Program for American Forestry.

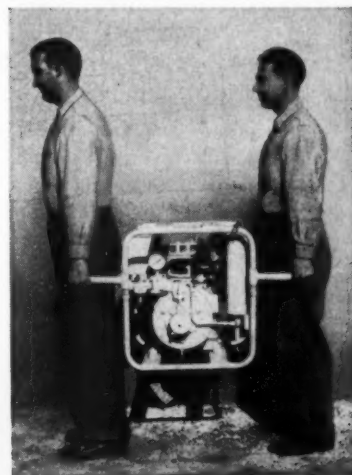
LAST MONTH FOUND the Forest Service reporting that 1954 has been the "second best" fire year—both in number of fire starting and acreage burned—on national forest-protected land in Oregon and Washington. Fewest number of fires ever to occur on Forest Service lands was in 1948. The lowest burn acreage was recorded in 1953. Total number of fires started this year in the two states was 706; the five year-average is 1,127.

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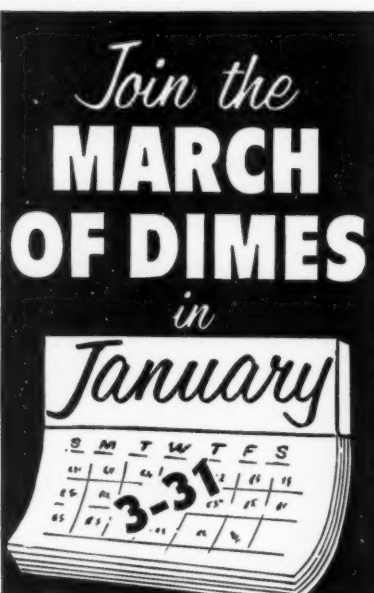
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The Wichita Refuge

(From page 25)

similar to the ones saddle-weary cowboys drove up the Chisholm Trail to market. In the present herd some 80 animals prove the right to their name by having horns as long as 7 feet.

Coronado was responsible for the spread of the longhorns in the Southwest, while searching for the Seven Cities of Cibola whose streets were supposed to have been paved with gold. These cities turned out to be only clusters of conical grass huts inhabited by the Indians for whom the Refuge is named. Listed for one of Coronado's expeditions were "300 Spaniards, 1000 Indians, 1000 extra horses, herds of swine, sheep and kine, and 6 swivel guns." Naturally, some longhorns escaped to roam the Southwest. And it is from descendants of these escapees that the Forest Service in 1928 managed to round up 28 longhorns to start the Wichita herd.

Wichita's once-native elk were exterminated in 1875 but now there

is a herd of more than 300—the result of 17 transplants from Jackson Hole, Wyoming, in 1917. There is a small herd of introduced antelope, too. Native white-tailed deer have increased greatly under protection and are at home all over the Refuge. Fox squirrels, raccoons, opossums, and other smaller animals are common.

In addition to being right for research and for a bison sanctuary, Wichita is remarkable for its variety of birds. Because Oklahoma lies on the border of overlapping climatic zones, birds of all types meet on the Refuge.

Since Wichita is somewhere this side of paradise, it has features that are definitely minus: poison ivy, some rattlesnakes, and cottonmouth moccasins. There are dust storms in spring and summer, and the wind blows almost constantly.

For those just interested in being out of doors, Wichita offers many attractions. The motorist finds good roads throughout the preserve. One of macadam winds its three-mile way up to Wichita's highest point, Mt. Scott. This lookout was named for General Winfield S. Scott, hero of three wars—1812, Mexican, and Civil.

There are nine areas for picnicking and camping. A stay of more than a week requires a permit from the Refuge superintendent. At Quanah Parker Lake, there is a community house and an outdoor kitchen, and at Boulder Camp, there is a cabin and an outdoor kitchen. These may be reserved without charge on a first-come basis by organizations or groups. Incidentally, admission to the Refuge is free and no guides are necessary.

Best beaches are at Jed Johnson, Quanah Parker, and Elmer Thomas lakes. There is also good swimming at Sunset Pool and in the potholes of Cache Creek below Boulder. And who knows? You might find some of that government gold that was lost there.

You can fish. All nonresidents over 16 years of age must have a license, issued in drug or sporting goods stores and by fish and game wardens. A ten-day permit costs \$1.25 and lets you take ten bass or channel catfish or twenty-five fish of all kinds in one day.



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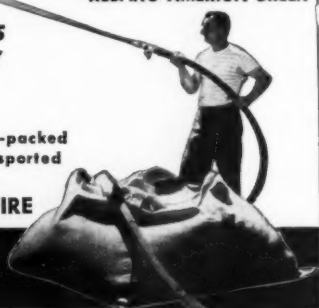
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And Then There Were None

(From page 29)

quired less and less sleep. More time was spent in play. Squirrel talk, Mrs. Shimek learned, includes bird-like chirps, a kitten's cry, squealing and a miniature growl.

Before long, the squirrels were celebrated animals in Milwaukee. People came by the dozens to see them. Photographers took their pictures and Wallie became known as the "hot rod driver" after being snapped in a toy racing car. A number of people asked permission to adopt the pets but Mrs. Shimek said "no, for I wanted to make sure that they had their chance to lead a normal life and were not imprisoned."

Eventually, the squirrels were moved to a flower house in the back yard where they also learned to climb an improvised tree limb. Soon, however, the family began to dwindle. Brazillia left. Later she returned briefly and then left again this time taking Cassia with her. They were seen around after that but never came home. Also, just about that time Hazel became listless and did not eat well. A veterinarian diagnosed her malady as pleurisy but was unable to save her.

That left two—Phillie and Wallie. They pretty much had the run of the Shimek home and had a merry time of it for awhile. Then Phillie turned up missing. As squirrels will, he had gone forth to find his rightful place in squirreldom. So then there was only one.

Wallie, the runt, never had developed properly. His coat was always scrawny. He had no upper teeth at all and his lowers were like long tusks which turned inward to meet his jaw. Just the same, he was the smartest of the five for he knew when he was well off. He could eat only the softest foods. The only nut he could eat was the peanut.

Just the same, Wallie had a lot of fun. All summer long, he made the rounds of the neighborhood. He knew all the children and they played with him. Their homes were all open to him. Sometimes he raided gardens for gourds and baby cucumbers for which he developed a fondness. There was something about a wash on a line that made a rascal of him. He would climb the clothes pole to reach the line, scamper out on it and then hang on the

clean clothes swinging in the breeze. These incidents were always reported by the neighbors as "very cute" although Wallie did make mincemeat of one nylon slip.

When Christmas came, Wallie made his usual rounds and had fun in the neighbors' Christmas trees. However, it was to be his only Christmas. Once again he began to fail. Repeated trips to the veterinarian's showed that a bad cold he had caught had developed into heart disease. The Shimeks were very sad and nursed him like a baby but he passed on and then there were none.

A neat marker for Wallie near his flower house reads "Weweni niban nind ajitamosim" — which in the Chippewa Indian language means "Sleep well, my little squirrel." Misty-eyed children in the neighborhood and Mrs. Shimek grieve for the runty little squirrel they all became fond of. But they always brighten when they recall how he swung on the nylon slip.

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Washington Lookout

(From page 6)

Secretary of the Army Stevens added emphasis to the Administration's viewpoint. He said the act "is built around the sound principle that the states and local units of government should be primarily responsible for doing those things that come within their means and ability," and that the assistance from the federal government would be justified "only if the programs constitute sound elements of integrated water resources program for the river basins of which the watersheds are a part."

State governors have been quick to establish the necessary administrative procedures to carry out their responsibilities under the act—the requirement that the governor approve applications from local organizations within his state before federal assistance may be requested. Requests for program approval are starting to pour into the Department of Agriculture and probably will be the basis for budget requests to be presented early in 1955. Most states have the necessary conservation agencies to help carry forward the intent of the program. The watershed congress committee on Development of Adequate State Agencies pointed out that in 18 states the State Soil Conservation Committee has been assigned to work with the federal agencies under Public Law 566; in four, the Department of Conservation or National Resources; in four, the governor with an advisory board; in two, the State Department of Agriculture; in two, the State Engineer; and in the others, some type of commission or board. It was suggested that an overall Conservation or Natural Resources Commission would probably be the ideal state organization to spearhead the program, and that the responsible state agency should have final decision on priorities and should be empowered to reject or approve any proposal by the federal agencies.

Can the new law be a disguised approach to valley authorities? This

question was not raised on the floor of the watershed congress, but it did form some of the cloakroom conversation. Step by step, it was pointed out, first comes the local watershed program, then the inter-watershed compact among sub-watersheds of a major drainage, then the interstate compacts as to cost sharing and controls of land-use practices. Scarcely any point on the surface of the United States is not within a watershed or potential watershed district. A committee on A Basic Approach to State Legislation for Watershed Development suggested the desirability of watershed agencies having the power to tax, to condemn, to manage appropriated funds and to enter into contracts to organize districts by petition or general election, to apply taxes in direct proportion to benefits received by the individual taxpayers, to control pollution and other related public health problems. In the opinion of the writer, there is a need for vigilance among developers and users of the watershed to see that a program that is now essentially a grassroots approach to conservation does not grow by virtue of zeal and the magnitude of the job into one that becomes dominated by super states, and finally the federal government which tried to give the program away. Watershed protection and development involves all aspects of land and natural resource use. While the primary aspects discussed at the watershed congress were those concerning agricultural use, it was recognized that the watershed encompasses all the rural and urban areas of a drainage.

For the first time some 300 grassroots operators of watershed were brought together by watershed congress. Up to this time they had been fighting essentially local battles for conservation. Now they have discovered, if they had not known it before, a mutuality of interest and objective. While the congress leaders very carefully avoided any move toward organizing the group into a cohesive political action unit, a common interest was evident, and persons who had been vocal locally were given the confidence and assurance of numbers. We can expect the watershed leaders to play a prominent part in both local and national conservation programs from here on. The effect of the watershed approach and an understanding of the water-

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shed, which will be publicized in order to stimulate the necessary local action to qualify under Public Law 566, will place the weight of public opinion strongly against anyone who misuses land and water. Farmers, grazers, miners, and the forest products industries, state and federal custodians of public lands, and industries using or polluting water will be expected as the program goes forward to make their contributions to watershed protection and development, either voluntarily or by force of local statutes. The potential of the watershed approach to conservation is tremendous!

Control of water use by state action was included in the watershed congress by virtue of the presentation of a draft proposal developed by Joe C. Barrett, president of the National Conference of Commissioners on Uniform state Laws (See page 17). The state of Arkansas is preparing a bill, which may serve as a model, providing that title and right to control surface waters in streams and lakes, in excess of domestic needs of riparian owners, is in the state; that would create a water commission to whom users of water would make application for water rights; and would authorize the commission to apportion the available supply among the applicants. While not included in the proposed draft, it is anticipated that supplemental legislation will be adopted to encourage storage of excess water in wet seasons for use during periods of drought.

Interest in the Muskingum and Miami Water Conservancy Districts in Ohio, expressed by a number of members of the watershed congress gives an indication that these areas which have had long and successful operation will be studied by state organizations not now having conservancy districts. As pointed out by the three members of the Cabinet, the speed with which the small watershed act is translated into actual works of improvement on the ground will depend upon the states and local agencies. It can be expected, therefore, that the participants in the congress will be assuming positions of leadership in drafting state and local legislation, including appropriations measures, to implement the program at home.

Three new federal measures were provided by the 83rd Congress to aid the watershed development program. In addition to the watershed act the amended Water Facilities Act, which formerly applied only to

the arid and semi-arid states, now provides for long-term district or insured loans in all states for soil and water conservation practices, irrigation, drainage, pasture improvement and reforestation on farms. The revised revenue code allows certain soil and water conservation measures to be charged against farm income for income tax purposes. With these three measures already enacted, and with top-level coordination being developed among the federal agencies administering soil and water programs, and with the chances for legislative establishment of a national water policy, it appears that the watershed approach to resource conservation will be firmly established.

While some dissatisfaction was expressed regarding the limitations of federal participation embodied in Public Law 566, and particularly with Section 4 of the act which predicates federal assistance in the development of impounding structures solely on flood prevention, it is not believed that any serious attempt will be made to amend the law in the first session of the 84th Congress.

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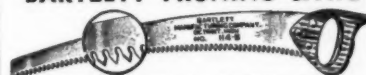


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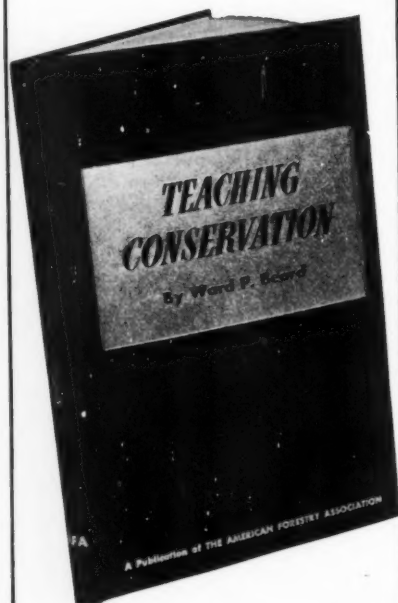
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Rock Creek Watershed Problem Studied

REPRESENTATIVES of approximately 40 different conservation-type organizations turned out in full force on Sunday, December 5, at Bethesda, Maryland to discuss a problem right in their own back yard—namely how to restore Rock Creek in the heart of the District of Columbia and nearby Maryland as a model watershed.

Representatives of the various groups with headquarters in Washington quickly made it known that they were present more as residents and taxpayers interested in their community and expressed their interest in helping with any reasonable program that would help to restore the watershed to its former beauty.

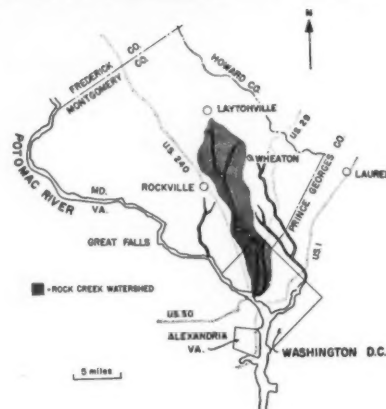
Undaunted by one pessimist's report that both Rock Creek and Rock Creek Park are now tainted beyond recall in the minds of most Washington residents, the group

went ahead with plans to form a Rock Creek Watershed Council to focus public attention on a needed improvement program. Rock Creek, watershed specialists said, by virtue of its location in the capital and by its size, would make an ideal demonstration area and would therefore have national significance at a time when much interest is being expressed in applying remedial measures to sick watersheds everywhere.

However the bulk of people present including representatives of a number of government agencies said they did not believe any organization that is formed should seek government funds to put the watershed in shape. Bernard Frank, of the U.S. Forest Service, said that on the basis of his own studies he believed that county enabling acts and good cooperation at a local level would probably be all that was required.



Converting the Rock Creek Watershed (right) into a model demonstration area will be a primary objective of Washington area conservationists in future months. Active in the proposed program are (left to right): Irwin Schiff, chairman, zoning and planning commission, Montgomery Federation of Citizens Association; Bernard Frank, U. S. Forest Service; George F. Hazelwood, chairman, Interstate Commission on Potomac River Basin; L. M. Fisher, acting director, Commission on Potomac River Basin; and Dr. Symons, former dean, University of Maryland, acting chairman of the new organization.





What's NEWS across the nation

CONSERVATION GROUPS INCLUDING THE AMERICAN FORESTRY ASSOCIATION LAST MONTH were looking with favor on a new multiple use bill for the 84th Congress authored by Hugh B. Woodward, a regional director of the National Wildlife Federation, Dr. Ira Gabrielson, Wildlife Management Institute, and members of the public lands grazing committee of the International Association of Game, Fish and Conservation Commissioners. The preliminary draft of the bill first introduced at a legislative needs conference in December, sponsored by the National Wildlife Federation, contains two important provisions. They are: 1) declaring the primacy of watershed protection and 2) establishing multiple use advisory councils.

INITIAL REACTION TO THIS BILL BY GROUPS REPRESENTED AT THE MEETING WAS FAVORABLE.

Some regarded it as a logical successor to the Hope-Aiken grazing bills of the 83rd Congress which, by and large, are not completely satisfactory to most of the conservation groups. The AFA, for example, in recent months has been coming to the conclusion that legal reviews of the type proposed in the Hope-Aiken bills would not prove conducive to flexible forest management in the long run. At the same time the AFA looks with favor on recognition by Congress of the various multiple uses on the forests, providing the present system of priorities is not upset and providing the Secretary's powers are not impaired.

WHILE THE NEW WOODWARD BILL IS NOT A GRAZING MEASURE IN ANY SENSE OF THE WORD it will probably be regarded as a successor to the Hope-Aiken measures and in all probability it is one that all of the conservation groups will gladly support. To obtain the views and recommendations of the various users of national forests on all questions of policy, the bill seeks establishment of multiple use advisory councils on a national and state-wide basis giving equal representation to each of the multiple uses on the forests. Such councils, the bill states, would not supersede the functions of the advisory councils established in 1950 "except . . . that the multiple use advisory councils may consider and make recommendations upon any matter involving the multiple uses of the national forests and the administration of such multiple uses. Expenses of council members would be paid. Another section would give the Secretary "full authority to limit or discontinue the occupancy and use of any such lands for the purpose of preventing injury to such lands or to change the use of any such lands from one use to any other authorized use, and to take appropriate action with respect to any unauthorized or unlawful use of occupancy of any such lands." As introduced at the federation meeting, some were inclined to think this section might empower the Secretary to end mining law abuses on national forests but subsequent investigation would indicate that this probably is not the case.

ONE POSSIBLE OBJECTION TO THE BILL RAISED IN THE AFA WAS THAT IT CREATED A WEB of national and state councils that conceivably could impede the management processes. However, most staff members were inclined to minimize this possibility by pointing out that the government we live under operates by "checks and balances." As proposed in the bill, the councils could serve such a purpose. Moreover, they could prod a Secretary, the Forest Service or any user as might prove necessary. And as Woodward and other westerners including J. Perry Egan, director of the Utah Fish and Game Commission, pointed

(Turn to next page)

out "easterners who believe that all is well on western national forests are laboring under an illusion. All is not well and in some cases the Forest Service should take a more aggressive attitude both on grazing problems and in really implementing their own multiple use creations in concrete terms."

IF THE FEDERATION MEETING WAS ANY INDICATION, EVERY CONSERVATION GROUP IN the nation this year will join forces to press for the enactment of Rep. Baker's revised bill (H.R. 8225) to provide adequate funds for wildlife habitat development and for recreational, sanitary and other public use facilities on the national forests. The AFA which previously had objected to this measure on the grounds that earmarking of government money for such purposes was bad policy last year gave the bill its support on the recommendation of its executive committee. "The need for these services is so great that it is necessary to take a drastic and realistic view of this situation," the executive committee said. It was also that Department of Agriculture budget proposals in this regard were somewhat meagre.

REVISION OF THE COORDINATION ACT WAS DISCUSSED AT THE FEDERATION MEETING (Public Law 732 of the 79th Congress). It was agreed that desirable revisions would do four things: 1) Make the law clearly applicable to Army Engineer and Reclamation projects that were authorized by Congress prior to 1946; 2) Authorize planning for the enhancement of fish and wildlife values where opportunities occur in addition to planning for "mitigation of losses"; 3) Require submission of fish and wildlife reports and recommendations to Congress as an integral part of the project report submitted by the Corps of Engineers or Bureau of Reclamation; and 4) Provide for adequate financing of the fish and wildlife studies necessary to implement the purposes of the Coordination Act.

THE CONSERVATION GROUPS AT THE FEDERATION MEETING INDICATED THAT they "would have to be shown" as regards AFA's effort to enlist the support of the mining industry in an effort to correct mining claims abuses on national forests. While conservation organizations are united in their intention to support any strong effort to correct this situation they are not hopeful of any mining industry support. One representative at the meeting said flatly that AFA's intentions in this regard were doomed to failure. As an organization that stresses cooperation AFA is of the opinion, however, that an effort along these lines should be made and that the amount of mining industry support that is generated may prove surprising.

THE FEDERATION NAMED A SPECIAL COMMITTEE HEADED BY CHESTER WILSON, CONSERVATION Commissioner of Minnesota, to study the wetlands drainage problem. According to wildlife experts widespread drainage programs are being carried on by the Army Engineers without proper consideration for, or protection of, wildlife and recreational values. This committee plans to explore the possibility of drafting legislation or finding some peg whereby the engineering work would give wildlife and recreational needs due consideration in shaping up their programs. Other members are Carl Shoemaker, Michael Hudoba, Dr. Gabrielson and William Voight.

ANOTHER DETERMINED EFFORT TO AUTHORIZE CONSTRUCTION OF A DAM AT ECHO PARK IN Dinosaur National Monument was predicted last month at both the federation and Natural Resources Council meetings. A member of the Wilderness Society who sat in on a recent meeting of the Colorado Water Conservation Board, one of the groups spearheading the dam movement, reported renewed determination to press for their objective plus plans to make use of publications and other public relations media. The Sierra Club film "Wilderness River Trail" is believed by the dam supporters to have been mainly responsible for their defeat last year. Meanwhile, plans to fend off the monument onslaught were made last month in New York City at a meeting called by the National Parks Association. Grimly determined eastern groups represented at the meeting reported that the association could depend on an "avalanche of support," parks people said.

LOOKING AHEAD TO 1956. PRELIMINARY PLANS WERE MADE LAST MONTH TO HELP MARYLAND celebrate the golden anniversary of forestry in that state with an AFA Annual Meeting, probably in October, and with emphasis on small woodlot management and fisheries. Some of the plans for the affair will be built around Fred Besley, Maryland's first state forester and the father of Lowell Besley, executive director-forester of The American Forestry Association. Meanwhile, plans for the 1955 Annual Meeting in Jacksonville next fall were making good progress according to reports from the South last month.

McKay Rejects Mt. Rainier Tramway

By MARIAN E. FADELEY

Rejection of the proposed Mount Rainier tramway in Washington State by Interior Secretary Douglas McKay was announced December 21 at a press conference called by the National Park Service.

Park Service Director Conrad Wirth read a letter from Interior Secretary McKay to Alfred B. Langlie, Governor of Washington, rejecting the proposed Mount Rainier tramway. In his letter McKay said, "The National Park Service believes, and I agree, that the erection of a tramway, or some other form of permanent mechanical transportation facility on the mountainside, is not necessary for the full enjoyment of the great scenic resources in Mount Rainier National Park. . . . Therefore, on the basis of all the facts placed before us, no further consideration of proposals for construction of a tramway is included in our plans for future development of Mount Rainier National Park." The letter received a favorable reception from those present at the conference.

The attention of the conference was then directed to a brief review of a bill introduced by Rep. Engle of California, H. R. 9529, which would provide for hydro-electric facilities in California's Tuolumne Water District No. 2, a part of which is located in Stanislaus National Park. Members of the conference were urged to follow closely the action on this bill as it is expected to be pushed during this session of Congress.

Representatives of conservation

organizations present at the conference were almost unanimous in their condemnation of a two-page advertisement which recently appeared in several nation-wide magazines. The advertisement recommended timber cutting by private firms under Forest Service supervision in Olympic National Park. Mr. Wirth said that this advertisement attacked the policies and systems of the National Park Service which are established by Congress, and questioned the right of such an advertisement to be published.

Mr. Wirth also announced that the application for a television tower at Scott's Bluff, Nebraska had been rejected on the basis that it would mar the scenic beauty of the national park. He warned that pressure groups would probably be extremely active this year in an attempt to reverse this decision.

Plans were discussed for the 100th anniversary celebration of the birth of Woodrow Wilson which will take place in 1956. Federal and state commissions are being appointed to make this celebration a nation-wide affair, complete with radio broadcasts, school programs, etc. The state of Virginia, Wilson's birthplace, has already appropriated \$25,000 for this purpose.

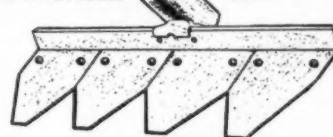
A proposal that the site of the Golden Spike which joined the Central Pacific Railroad and the Union Pacific Railroad in 1869 be preserved as a national historic site was reviewed briefly. The committee appointed to study this proposal still has the plan under advisement.

Independence Hall Restoration

Plans for restoring and refurbishing Independence Hall in Philadelphia were made last month by a committee of three experts on historic furnishings recently named by Interior Secretary McKay to assist the National Park Service. The experts are Mrs. Francis B. Crowninshield, of Marblehead, Mass.; Charles Nagel, director of the Brooklyn Museum, Brooklyn, N. Y.; and Charles F. Montgomery, director of the Henry Francis du Pont Winterthur Museum, Winterthur, Delaware.

Independence Hall, foremost historic shrine in the nation, and nearby historic structures form the nucleus of the Independence National Historical Park Project administered by the National Park Service. Approximately \$210,000 for restoring and refurbishing the first floor of Independence Hall was raised throughout the nation by the General Federation of Women's Clubs as part of their Americanism Program and donated to the National Park Service last summer.

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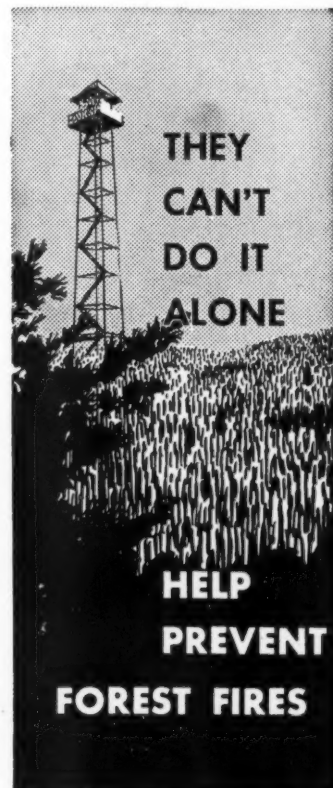
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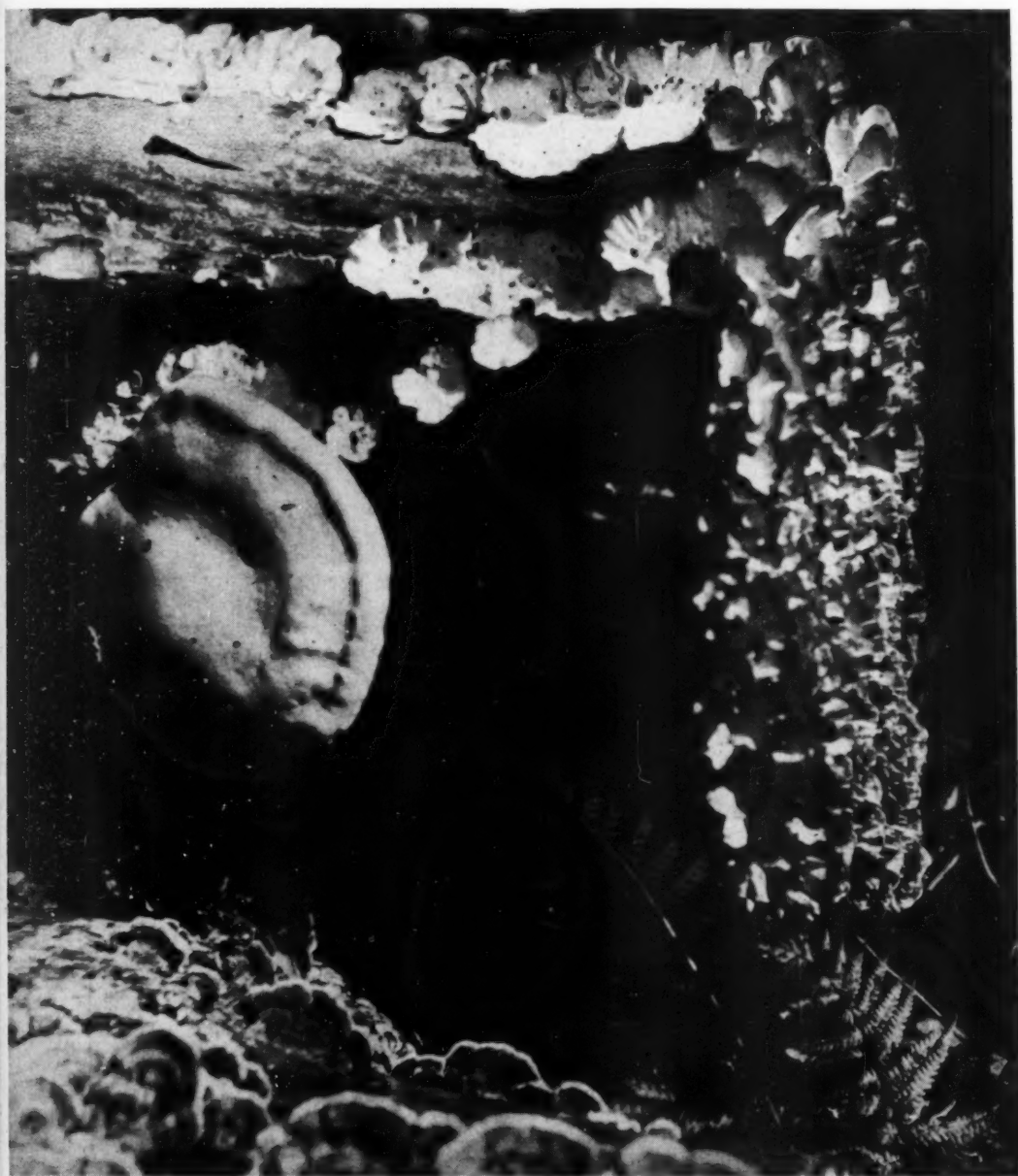
AMERICAN FORESTS

Magazine



Feature Photo of the Month

Photos used on this page will be of unusual rather than esthetic qualities and subject matter will be restricted to scenes, events, objects or persons related to the use, enjoyment or unique aspects of our renewable natural resources. For each picture selected AMERICAN FORESTS will pay \$10.



Nature decorates a fallen monarch. The jewel-like "decorations" on this log actually are humus growth. Picture was taken at Chatfield Hollow, Camp Roosevelt, near Killingworth, Connecticut

**Photo submitted
by Miss Vera Kearsley
New Haven, Connecticut**

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THERE's a lot of power packed in this compact Cat* D2 Tractor, one of a fleet of yellow rigs used by the Southern Advance Bag & Paper Co., Hodge, La. This company uses these tractors on the logging, clearing, planting and fire control jobs required in the intensive forest management of its 148,000 acre holdings. Here the D2 pulls a fire control plow in a timber management area near Jonesboro. Depending on soil conditions, the unit throws a wide furrow in one trip in third gear. Equipped with a tree planter, the D2 plants about 1½ acres of pine per hour in good going. With either attachment, it's easily trucked from area to area.

Power alone doesn't account for the D2's ability to get a lot of work done. That power is *matched* with weight and traction for maximum pull. Just as important, *all* parts of this rig are strongly built to keep it on the job and out of the shop—another factor in good production. An example of construction: track rollers and idlers are sealed to keep mud and dust out, and oil in, for longer wear. Another example: track shoes are made of rolled steel, heat treated for long life. All these and other details pay off in *more* work at *lower* cost with *less* down time than any competitive unit!

Wide furrow in one trip in third gear—a Cat D2 Tractor with fire control plow working for the Southern Advance Bag & Paper Co., near Jonesboro, La. Other rugged yellow units in the company's line-up: a D7, three D6s, ten D4s and two D2s.

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